

## **Greenpoint-Williamsburg Rezoning EIS**

### **CHAPTER 17: TRANSIT AND PEDESTRIANS**

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#### **A. INTRODUCTION**

This chapter of the EIS describes the transit and pedestrian travel characteristics and potential impacts associated with the proposed action, which affects an approximately 184-block area in Greenpoint and Williamsburg, bounded generally by Newtown Creek to the north, the East River to the west, the Williamsburg Bridge to the south, and McGuinness Boulevard and the Brooklyn-Queens Expressway to the east (see Figure 1-1 in Chapter 1, “Project Description”). As described in detail in earlier chapters of this EIS, the proposed action would allow existing manufacturing zoning and special mixed use district designations to be changed to permit residential use on the waterfront, residential and mixed use on most of the upland area, and to restrict certain areas currently zoned M3 to light industrial uses. Additionally, under Scenario A, the worst case transportation condition, a 27.8 acre waterfront park would be mapped to the west of Kent Avenue from Bushwick Inlet on the north to North 9<sup>th</sup> Street on the south.

This chapter describes in detail the existing conditions at transit and pedestrian facilities expected to be used by the majority of new demand from projected development sites. The analyses focus on the weekday 8-9 AM and 5-6 PM peak hours, the periods when demand from these predominantly residential development sites would be heaviest and the transit system is most heavily utilized. As discussed later in this chapter, the analysis of pedestrian impacts also focuses on the AM and PM peak hours, as midday impacts over and above those identified for the AM and PM would be unlikely. Future conditions in the year 2013 without the proposed action (the No-Action condition) are then determined, including additional transit and pedestrian demand and any changes in transit facilities and services expected by the year 2013. The increase in travel demand resulting from the proposed action is then projected and added to the No-Action condition to develop the 2013 future with the proposed action (the With-Action condition). Significant adverse impacts from project generated trips are then identified.

#### **B. EXISTING CONDITIONS**

##### **Data Collection**

Counts at key subway station stairways and fare arrays were conducted during the weekday AM and PM peak periods in May 2002 at the Bedford Avenue (L), Greenpoint Avenue (G), and Nassau Avenue (G) stations. AM and PM peak period pedestrian counts were also conducted at this time along the Bedford Avenue and Manhattan Avenue corridors and along Kent Avenue and West Street. A one percent background growth rate was applied to data collected in 2002 to reflect base year 2003 conditions for this EIS. Data on local bus ridership at the maximum load points along each route were obtained from NYC Transit.

## Subway Stations

Two subway lines serve the proposed action area in Greenpoint and Williamsburg. “L” trains on the Canarsie Line connect the study area to the 14<sup>th</sup> Street corridor in Manhattan via the 14<sup>th</sup> Street Tunnel. “G” trains on the Crosstown Line connect the study area with Long Island City to the north and Downtown Brooklyn and Red Hook to the south. The Crosstown Line is the only line in the subway system that does not traverse Manhattan, however connections to Manhattan are available in both Long Island City and Downtown Brooklyn.

Subway trips generated by the proposed action would primarily utilize three subway stations in proximity to the proposed action area, the Bedford Avenue station on the Canarsie (L) Line, and the Greenpoint Avenue and Nassau Avenue stations on the Crosstown (G) Line (see Figure 17-1). Trips to and from projected development sites in Greenpoint are expected to utilize the Greenpoint Avenue (G) station while trips to and from sites in Williamsburg would be distributed between the Bedford Avenue (L) and Nassau Avenue (G) stations.

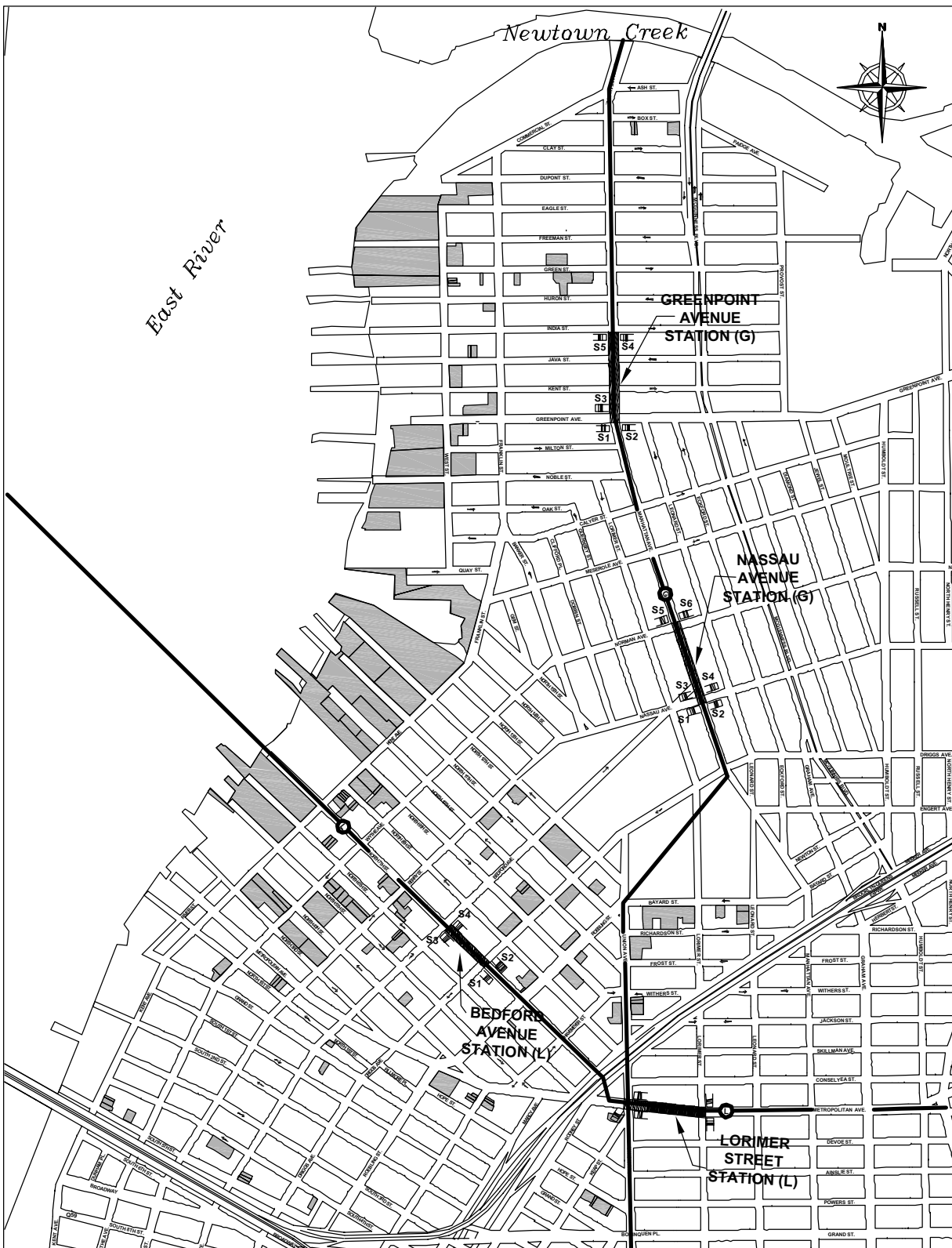
Some new subway trips generated by the proposed action are also expected to occur at the Lorimer Street station (G, L) at Lorimer Street and Metropolitan Avenue. However, as discussed later in this chapter, the Lorimer Street station is not included in the subway station impact analysis as it is located outside of the proposed action area to the east of the Brooklyn-Queens Expressway, and the number of new trips would be fewer than the 200-trip CEQR threshold for an impact analysis.

Table 17-1 shows the average weekday entering turnstile counts at the Bedford Avenue (L), Greenpoint Avenue (G) and Nassau Avenue (G) stations for the years 2000 through 2002, as well as the 2002 ranking of each station based on average weekday ridership relative to all 424 stations system-wide. It should be noted that the 2001 data in the table reflect the September 11, 2001 terrorist attack on the World Trade Center which resulted in significant service disruptions and changes in passenger travel patterns for the remainder of that year.

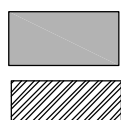
As shown in Table 17-1, based on 2002 data, the Bedford Avenue station is the most heavily used of the three stations at which the majority of project trips would occur. It ranked 89<sup>th</sup> out of 424 based on an average of 13,850 persons entering on a typical weekday. Demand at this station increased by 10.7 percent from 2000 to 2001, and by 8.4 percent from 2001 to 2002. The next most heavily used is the Greenpoint Avenue station with a rank of 173<sup>rd</sup> and an average of 7,421 persons entering on a typical weekday. Demand at this station increased by 2.4 percent from 2000 to 2001, and decreased by 5.1 percent from 2001 to 2002. The Nassau Avenue station has the lowest ridership of the group, ranking 186<sup>th</sup> with an average of 6,767 persons entering on a typical weekday. Average ridership at this station remained unchanged from 2000 to 2001 and decreased by 1.6 percent from 2001 to 2002.

A threshold of 200 peak hour trips entering or exiting a station has been established under *CEQR* criteria to determine whether new subway demand from a proposed action warrants a detailed analysis at a particular station. As discussed later in this chapter, the travel demand forecast and subway trip assignment for the projected development sites indicate that new demand from the proposed action would exceed this threshold at the Bedford Avenue and Greenpoint Avenue stations. Although the Nassau Avenue station would also experience fewer than 200 new trips in either the AM or PM peak hour, it is included in the subway station impact analysis given its proximity to the proposed action area and to the proposed park (Site 211).

Proposed Action Area Subway Stations

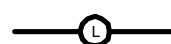


LEGEND:



Projected Development Site

Subway Station



Subway Line



Subway Entrance Stair

S1

Subway Stair Number

**TABLE 17-1**  
**Average Weekday Entering Turnstile Counts**

Station	Rank	2000	2001	2002	Percent Change	
					2000-2001	2001-2002
Bedford Avenue (L)	89	11,536	12,774	13,850	10.7%	8.4%
Greenpoint Avenue (G)	173	7,636	7,818	7,421	2.4%	-5.1%
Nassau Avenue (G)	186	6,872	6,875	6,767	0.0%	-1.6%
<b>Totals:</b>		26,044	27,467	28,038	5.5%	2.1%
<b>Notes:</b> Rank out of 424 stations system-wide in 2002. 2001 data include 9/11-related changes in ridership and service patterns. <b>Source:</b> New York City Transit 2002 Subway & Bus Ridership Report.						

The examination of conditions at analyzed stations focuses on those station elements (street stairways and fare arrays) with the potential to be affected in the future with the proposed action. The analyses were prepared using the design capacities for stairs, escalators, turnstiles, and high-wheel exits specified in the *CEQR Technical Manual and NYCTA Station Planning and Design Guidelines*, as well as procedures set forth in *Pedestrian Planning and Design* by John J. Fruin. All analyses reflect peak 15-minute conditions in the AM and PM peak hours. The stairway analyses were conducted using the Fruin pedestrian level of service (LOS) methodology, which equates pedestrian flow per minute per foot of stairway width with qualitative measures of pedestrian comfort. Based on the calculated values of pedestrian volumes per foot width of stairway per minute, Fruin defines six levels of service with letters A through F, as shown in Table 17-2. Level of service A is representative of free flow conditions without pedestrian conflicts and LOS F depicts significant capacity limitations and inconvenience.

Practical capacities were calculated for each stairway analyzed by multiplying service volumes at LOS C/D, which is 10 persons per foot width per minute (PFM), by the effective stair width and an adjustment factor to account for two-directional friction (where applicable). Peak 15-minute volumes were then compared with the capacities to obtain a v/c ratio for each peak hour. Using this methodology, LOS A, B, and C correspond to volume-to-capacity ratios of less than 1.0. LOS D, E, and F represent demand levels that exceed capacity, and hence, the v/c ratios are greater than 1.0.

Levels of service for turnstiles and high-wheel exits are also described in terms of volume-to-capacity ratios, with LOS A being less than 0.2, LOS B from 0.2 to 0.4, LOS C from 0.4 to 0.6, LOS D from 0.6 to 0.8, LOS E from 0.8 to 1.0 and LOS F over 1.0. Any volume-to-capacity ratio greater than 1.0 signifies volumes beyond capacity and extended queues.

Following are descriptions of the physical characteristics and the services provided at each analyzed station, and the results of the analyses of Existing conditions at each analyzed station element during the weekday 8-9 AM and 5-6 PM peak hours. An analysis of line haul conditions on the Canarsie/14<sup>th</sup> Street Line is also provided.

**TABLE 17-2**  
**Stairway Level of Service Definitions**

Level of Service	Pedestrians/Foot/Minute (PFM)	Comments
A	Up to 5	Free flow conditions
B	5 - 7	Minor reverse flow will cause minor conflicts.
C	7 - 10	Slight restrictions in speed and difficulties in reverse flows.
D	10 - 13	Significant restriction in speed and difficulties in reverse flows.
E	13 - 17	Reductions of speeds, serious reverse traffic conflicts, and intermittent stoppages.
F	More than 17	Complete breakdown in traffic flow.

### ***Bedford Avenue Station (L)***

The Bedford Avenue station on the Canarsie/14<sup>th</sup> Street (L) Line, located beneath North 7<sup>th</sup> Street, is comprised of a single island platform with two mezzanines, a full-time mezzanine at Bedford Avenue and a second part-time mezzanine at Driggs Avenue that is open from 6:15 AM to 10:30 PM. The Bedford Avenue mezzanine is reached via stairs on the north and south sides of North 7<sup>th</sup> Street, and is controlled by a fare array (H-9) with five entry/exit turnstiles. The Driggs Avenue mezzanine, reached via stairs on the north and south side of North 7<sup>th</sup> Street, is unmanned and is controlled by one high entry/exit turnstile and a high-revolving exit gate.

It is anticipated that new peak hour subway trips generated by the proposed action would occur at both mezzanines and would utilize all four street stairs at this station. Table 17-3 shows 2003 existing conditions at these facilities in the AM and PM peak hours. As shown in Table 17-3, both fare arrays and all street stairs at this station currently operate at LOS C or better in both peak hours.

### ***Greenpoint Avenue Station (G)***

The Greenpoint Avenue station on the Crosstown (G) Line is comprised of two side platforms located beneath Manhattan Avenue between Greenpoint Avenue and India Street (see Figure 17-1). A full-time fare array (N-405) with four turnstiles is located on a mezzanine at the south (Greenpoint Avenue) end of the station. Two stairways on the west side of Manhattan Avenue and one on the east side provide access to this mezzanine. A platform-level fare array and single street stair are also located at the north end of each platform at India Street. Access from India Street to the northbound (Queens-bound) platform is controlled by one high entry/exit turnstile and a high revolving exit gate. Two entry-exit turnstiles and two high revolving exit gates control access from India Street to the southbound (Brooklyn-bound) platform. Both of these unmanned entrances are open from 5:15 AM to 11:40 PM, Monday through Friday, and from 5:15 AM to 9:45 PM on weekends.

**TABLE 17-3**  
**Existing Subway Station Analysis**  
**Bedford Avenue (L) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	Peak 15 Minute Volume (4)	PFM (5)	Volume to Capacity Ratio	LOS
S4	Stairway @ NE Corner Bedford Avenue/ N. 7th Street	AM	3.20	480	246	5.13	0.51	B
		PM	3.20	480	251	5.23	0.52	B
S3	Stairway @ SE Corner Bedford Avenue/ N. 7th Street	AM	3.20	480	350	7.29	0.73	C
		PM	3.20	480	325	6.77	0.68	B
S2	Stairway @ NE Corner Driggs Avenue/ N. 7th Street	AM	3.20	480	54	1.13	0.11	A
		PM	3.20	480	60	1.25	0.13	A
S1	Stairway @ SE Corner Driggs Avenue/ N. 7th Street	AM	3.20	480	199	4.15	0.41	A
		PM	3.20	480	113	2.35	0.24	A

**FARE ARRAYS AND EXIT GATES**

		Maximum		Peak	Volume to			
No.	Station Element/Location	Peak Period (1)	15 Minute Capacity (6)	15 Min. Volume (4)	Capacity Ratio	LOS		
H-9	Bedford Avenue/ N. 7th Street 5 entry/exit turnstiles	AM	2,400	596	0.25	B		
		PM	2,400	576	0.24	B		
H-1	Driggs Avenue/ N. 7th Street 1 high-entry/exit turnstile 1 high revolving exit gate	AM	750	253	0.34	B		
		PM	750	173	0.23	B		

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.
- (2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
- (3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).
- (4) Source: PHA May 2002 field counts.
- (5) Persons per foot width of stairway per minute.
- (6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYCT guidelines.

It is anticipated that new peak hour subway trips generated by the proposed action would occur at all three fare arrays and would utilize four of the five street stairs at this station. (Stair S2 at the southeast corner of Manhattan and Greenpoint Avenues is not expected to be used by trips generated by the proposed action as two other stairs serving the same mezzanine are in closer proximity to projected development sites.) Table 17-4 shows 2003 existing conditions at these facilities in the AM and PM peak hours. As shown in Table 17-4, all fare arrays and street stairs at this station currently operate at LOS A in both peak hours.

### ***Nassau Avenue Station (G)***

The Nassau Avenue station on the Crosstown (G) Line is comprised of two side platforms located beneath Manhattan Avenue between Nassau and Norman Avenues (see Figure 17-1). A full-time fare array (N-408A) with four turnstiles, one high entry/exit turnstile and one high revolving exit gate is located on a mezzanine at the south (Nassau Avenue) end of the station. Two stairways on the west side of Manhattan Avenue and two on the east side provide access to this mezzanine. A platform-level fare array and single street stair are also located at the north end of each platform at Norman Avenue. Access from Norman Avenue to the northbound (Queens-bound) platform is controlled by a single high entry/exit turnstile. One entry-exit turnstile and one high revolving exit gate control access from Norman Avenue to the southbound (Brooklyn-bound) platform. Both of these unmanned entrances are open from 5:00 AM to 11:15 PM, Monday through Friday, and from 6:00 AM to 12:10 AM on weekends.

It is anticipated that new peak hour subway trips generated by the proposed action would occur at all three fare arrays and would utilize four of the six street stairs at this station (S5 and S6 at Norman Avenue and S1 and S3 on the west side of Manhattan Avenue at Nassau Avenue). Table 17-5 shows 2003 existing conditions at these facilities in the AM and PM peak hours. As shown in Table 17-5, all analyzed fare arrays and street stairs at this station currently operate at LOS A in both peak hours except for fare array H-2 on the northbound platform which operates at an acceptable LOS C in the AM peak hour and LOS B in the PM.

## **Subway Line Haul**

Line haul is the volume of subway riders passing a defined point (usually the point of maximum demand or “peak load point”) on a given subway line. The line haul capacity of a given subway line is a factor of the number of trains scheduled, the number of cars per train, and the per-car capacity. The line haul analysis for the proposed action focuses on the two subway lines serving the proposed action area – the Canarsie/14<sup>th</sup> Street (L) Line and the Crosstown (G) Line.

An analysis of 2003 Existing subway line haul conditions on the Canarsie/14<sup>th</sup> Street (L) Line and the Crosstown (G) Line is provided in Table 17-6. The analysis of the Canarsie/14<sup>th</sup> Street Line examines peak hour conditions on L trains at Bedford Avenue, the peak load point in the peak Manhattan-bound direction in the AM, and at Union Square, the peak load point in the peak Brooklyn-bound direction in the PM. The analysis of the Crosstown Line examines peak hour conditions on G trains at Clinton-Washington Avenues, the peak load point in the peak Brooklyn-bound direction in the AM, and at Fulton Street-Lafayette Avenue, the peak load point in the peak Queens-bound direction in the PM. As shown in Table 17-6, under Existing conditions, L trains currently operate over capacity in the Manhattan-bound direction in the AM peak hour with a volume-to-capacity (v/c) ratio of 1.05. During the PM peak hour, L trains typically operate with a v/c ratio of 0.67 in the Brooklyn-bound direction. G trains currently

**TABLE 17-4**  
**Existing Subway Station Analysis**  
**Greenpoint Avenue (G) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	Peak 15 Minute Volume (4)	PFM (5)	Volume to Capacity Ratio	LOS
S4	Stairway @ SE Corner Manhattan Avenue/India Street	AM	3.20	480	96	2.00	0.20	A
		PM	3.20	480	96	2.00	0.20	A
S5	Stairway @ SW Corner Manhattan Avenue/India Street	AM	3.20	480	99	2.06	0.21	A
		PM	3.20	480	89	1.85	0.19	A
S2	Stairway @ SE Corner Manhattan Ave./Greenpoint Ave.	AM	4.07	611	57	0.93	0.09	A
		PM	4.07	611	82	1.34	0.13	A
S3	Stairway @ NW Corner Manhattan Ave./Greenpoint Ave.	AM	3.20	480	103	2.15	0.21	A
		PM	3.20	480	118	2.46	0.25	A
S1	Stairway @ SW Corner Manhattan Ave./Greenpoint Ave.	AM	4.07	611	80	1.31	0.13	A
		PM	4.07	611	106	1.74	0.17	A

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	Peak 15 Min. Volume (4)	Volume to Capacity Ratio	LOS
H-1	Northbound Fare Array Manhattan Avenue/India Street					
		1 entry/exit turnstile	AM 750	96	0.13	A
		1 high revolving exit gate	PM 750	96	0.13	A
H-2	Southbound Fare Array Manhattan Avenue/India Street					
		2 entry/exit turnstiles	AM 1,500	99	0.07	A
		2 high revolving exit gates	PM 1,500	89	0.06	A
N-405	Greenpoint Avenue Fare Array Manhattan Ave./Greenpoint Ave.					
		4 entry/exit turnstiles	AM 1,920	240	0.13	A
			PM 1,920	306	0.16	A

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.
- (2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
- (3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).
- (4) Source: PHA May 2002 field counts.
- (5) Persons per foot width of stairway per minute.
- (6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYCT guidelines.



**TABLE 17-5**  
**Existing Subway Station Analysis**  
**Nassau Avenue (G) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	Peak 15 Minute Volume (4)	PFM (5)	Volume to Capacity Ratio	LOS
S4	Stairway @ NE Corner Manhattan Ave./Nassau Ave.	AM	3.20	480	110	2.29	0.23	A
		PM	3.20	480	122	2.54	0.25	A
S2	Stairway @ SE Corner Manhattan Ave./Nassau Ave.	AM	3.20	480	211	4.40	0.44	A
		PM	3.20	480	150	3.13	0.31	A
S3	Stairway @ NW Corner Manhattan Ave./Nassau Ave.	AM	3.20	480	5	0.10	0.01	A
		PM	3.20	480	8	0.17	0.02	A
S1	Stairway @ SW Corner Manhattan Ave./Nassau Ave.	AM	3.20	480	32	0.67	0.07	A
		PM	3.20	480	38	0.79	0.08	A
S6	Stairway @ NE Corner Manhattan Ave./Norman Ave.	AM	3.20	480	122	2.54	0.25	A
		PM	3.20	480	73	1.52	0.15	A
S5	Stairway @ NW Corner Manhattan Ave./Norman Ave.	AM	3.20	480	64	1.33	0.13	A
		PM	3.20	480	73	1.52	0.15	A

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	Peak 15 Min. Volume (4)	Volume to Capacity Ratio	LOS
H-2	Northbound Fare Array Manhattan Ave./Norman Ave. 1 entry/exit turnstiles	AM	300	122	0.41	C
		PM	300	73	0.24	B
H-1	Southbound Fare Array Manhattan Ave./Norman Ave. 1 entry/exit turnstiles 1 high-revolving exit gate	AM	750	64	0.09	A
		PM	750	73	0.10	A
N-408A	Nassau Avenue Fare Array Manhattan Ave./Nassau Ave. 1 entry/exit turnstiles 1 high-revolving exit gate 4 entry/exit turnstiles	AM	2,670	358	0.13	A
		PM	2,670	318	0.12	A

**Notes**

- (1) Peak Hours: 8-9 am and 5-6 pm.  
(2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.  
(3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).  
(4) Source: PHA May 2002 field counts.  
(5) Persons per foot width of stairway per minute.  
(6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYCT guidelines.

**TABLE 17-6**  
**Existing Subway Line Haul Conditions**  
**Canarsie/14<sup>th</sup> Street (L) Line and Crosstown (G) Line**

Line	Peak Hour	Peak Direction	Trains per Hour (1)	Cars per Hour (1)	Available Capacity (2)	Passengers per Hour (1)	V/C Ratio (3)
<b>L</b>	AM	Manhattan-Bound	15	120	17,400	18,266	1.05
	PM	Brooklyn-Bound	15	120	17,400	11,644	0.67
<b><u>G</u></b>	<u>AM</u>	<u>Brooklyn-Bound</u>	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>4,130</u>	<u>0.74</u>
	<u>PM</u>	<u>Queens-Bound</u>	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>2,220</u>	<u>0.40</u>
<b>Notes:</b> (1) Source: NYC Transit 2003 peak load point data. (2) Capacity based on 145 passengers/car for 60' cars and 175 passengers/car for 75' cars as per NYC Transit subway car loading guidelines. <u>L trains</u> operate with eight 60'-cars; <u>G trains</u> with four 75'-cars. (3) Volume-to-capacity ratio.							

operate below capacity in both peak hours with a v/c ratio of 0.74 in the Brooklyn-bound direction in the AM and a v/c ratio of 0.40 in the Queens-bound direction in the PM.

## Bus Service

### *New York City Transit Local Bus Service*

A total of ten NYC Transit local bus routes connect the proposed action area in Greenpoint and Williamsburg with other parts of Brooklyn as well as Queens and Manhattan. As shown in Figure 17-2, the principal bus corridors in the area include Broadway, Grand and Lorimer Streets, and Bedford, Driggs, Graham, Greenpoint and Manhattan Avenues. The highest concentration of bus services can be found in the vicinity of the Williamsburg Bridge Plaza where a terminus for several routes is located.

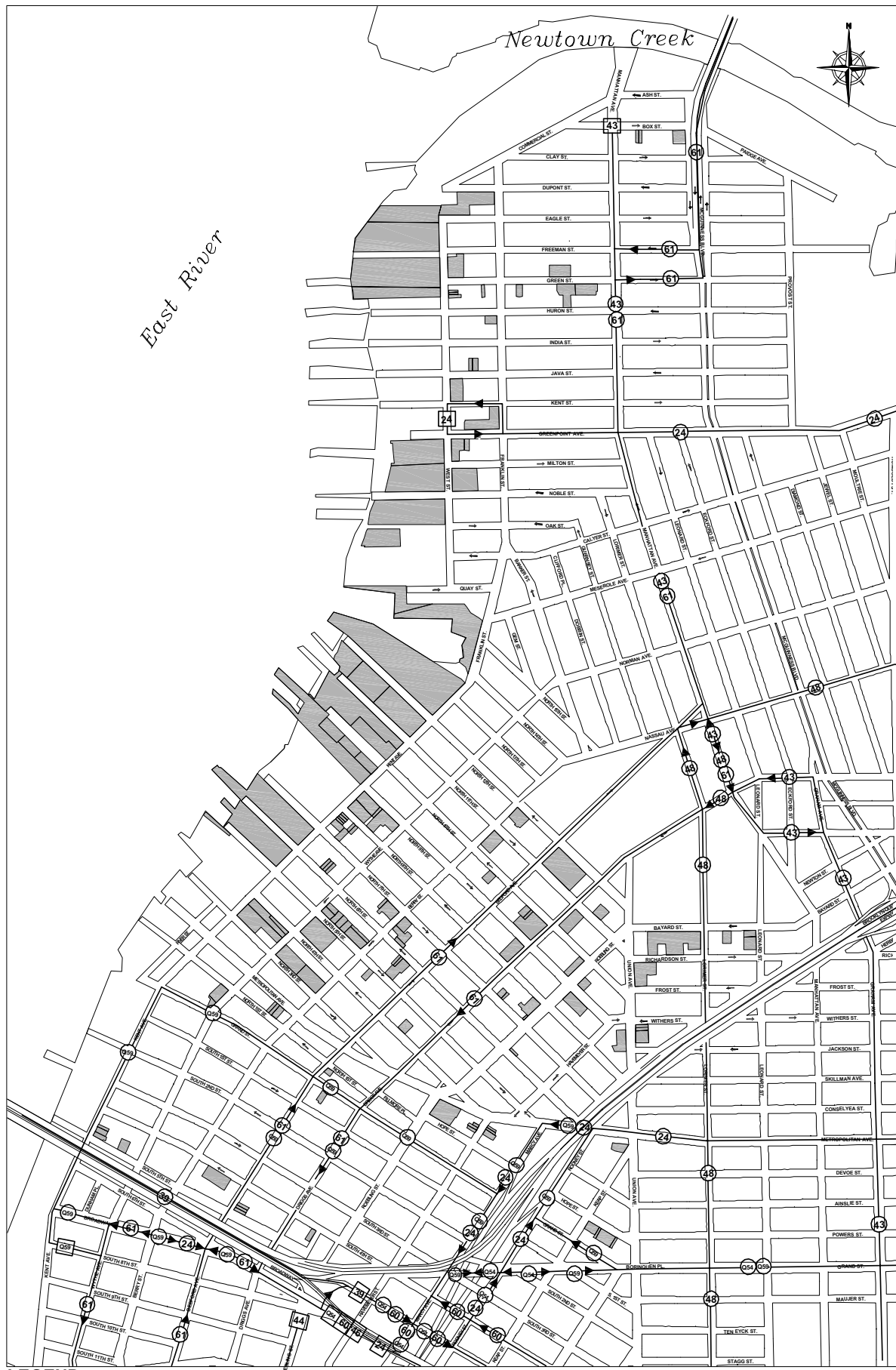
Table 17-7 presents a summary of peak hour, peak direction ridership at the maximum load point of each of the NYC Transit bus routes serving the study area. Brief overviews of each route are provided below.

#### B24

The B24 provides local service in Brooklyn from a Greenpoint terminus at West Street/Greenpoint Avenue to Kent Avenue/Grand Street in Williamsburg. In the vicinity of the proposed action area, B24 buses can be found operating on Greenpoint Avenue, Grand Street, Kent Avenue, Bedford Avenue and Broadway. During the AM peak hour, the maximum load point in both the eastbound and westbound directions occurs at Metropolitan and Graham Avenues, with an average of 19 passengers per eastbound bus and 32 passengers per bus westbound. During the PM peak hour, the maximum load point in the eastbound direction also occurs at Metropolitan and Graham Avenues, with an average of 20 passengers per bus. In the westbound direction, the maximum load point occurs at Greenpoint Avenue/47<sup>th</sup> Street with an average of 19 passengers per bus.

**TABLE 17-7**  
**Existing Local Bus Conditions**

Peak Hour (1)	Route	Peak Direction	Maximum Load Point	Peak Hour Buses (2)	Peak Hour Passengers (2)	Average Passengers Per Bus	Available Capacity (3)	Notes
AM	B24	EB	Metropolitan Ave./Graham Ave.	3	57	19	138	
		WB	Metropolitan Ave./Graham Ave.	3	96	32	99	
	B39	EB	Delancey St./Allen St.	4	49	12	211	
		WB	Williamsburg Bridge Plaza	4	110	28	150	
	B43	NB	Kingston Ave./Fulton St.	6	235	39	155	
		SB	Graham Ave./Grand St.	7	208	30	247	
	B44	NB	New York Ave./Church Ave.	10	491	49	159	(4)
		SB	Nostrand Ave./Eastern Parkway	9	442	49	143	(4)
	B46	NB	Utica Ave./Eastern Parkway	14	723	52	187	(4)
		SB	Utica Ave./Eastern Parkway	13	474	36	371	(4)
	B48	NB	Flatbush Ave./Lincoln Road	6	256	43	134	
		SB	Nassau Ave./McGuiness Blvd.	6	218	36	172	
	B60	NB	Wilson Ave./Gates Ave.	10	523	52	127	
		SB	Rockaway Blvd./Hegeman Ave.	7	296	42	159	
	B61	NB	Atlantic Ave./Hicks St.	7	288	41	167	
		SB	Manhattan Ave./Nassau Ave.	8	319	40	201	
	Q54	EB	Metropolitan Ave./Fresh Pond Rd.	6	214	36	176	
		WB	Metropolitan Station	8	352	44	168	
Q59	EB	Grand Ave./Queens Blvd.	5	193	39	132		
	WB	Grand Ave./Flushing Ave.	5	190	38	135		
PM	B24	EB	Metropolitan Ave./Graham Ave.	3	61	20	134	
		WB	Greenpoint Ave./47th St.	3	58	19	137	
	B39	EB	Delancey St./Allen St.	4	190	47	70	
		WB	Williamsburg Bridge Plaza	4	55	14	205	
	B43	NB	Kingston Ave./Fulton St.	6	221	37	169	
		SB	Tompkins Ave./Fulton St.	6	175	29	215	
	B44	NB	New York Ave./Church Ave.	8	316	40	204	(4)
		SB	Nostrand Ave./Eastern Parkway	9	477	53	108	(4)
	B46	NB	Utica Ave./Eastern Parkway	10	403	40	247	(4)
		SB	Utica Ave./Eastern Parkway	13	722	56	123	(4)
	B48	NB	Classon Ave./DeKalb Ave.	4	114	29	146	
		SB	Franklin Ave./Flushing Ave.	5	204	41	121	
	B60	NB	Rockaway Blvd./East NY Ave.	6	186	31	204	
		SB	Rockaway Ave./Hegeman Ave.	6	312	52	78	
	B61	NB	York St./Gold St.	6	271	45	119	
		SB	Atlantic Ave./Hicks St.	6	229	38	161	
	Q54	EB	Grand St./Graham St.	6	263	44	127	
		WB	Metropolitan Station	6	190	32	200	
Q59	EB	Metropolitan Bridge	4	178	44	82		
	WB	Grand Ave./Queens Blvd.	4	152	38	109		
Notes: (1) Peak Hours: weekday 8-9 AM and 5-6 PM. (2) Based on 2002 and 2003 NYC Transit ridership summaries. 2002 data adjusted to reflect 2003 conditions. (3) Available capacity based on a maximum of 65 passengers for a standard 40-seat bus. (4) Only limited-stop service provided in vicinity of proposed action area.								



B39

The B39 connects the Williamsburg Bridge Plaza in Brooklyn to Delancey and Allen Streets in the Lower East Side of Manhattan. Within the study area, B39 buses can be found operating on the Williamsburg Bridge and along South 3<sup>rd</sup> Street in Brooklyn. During both the AM and PM peak hours, the maximum load points occur at the route termini; Delancey and Allen Streets eastbound and the Williamsburg Bridge Plaza westbound. The number of eastbound passengers per bus on this route averages 12 and 47 in the AM and PM peak hours, respectively. Westbound passengers per bus average 28 and 14, respectively.

B43

The B43 provides local service within Brooklyn from Box Street/Manhattan Avenue in Greenpoint to Lincoln Road/Flatbush Avenue in Lefferts Gardens. In the vicinity of the proposed action area, the B43 traverses Manhattan Avenue and Graham Avenue. The maximum load point in the northbound direction occurs at Kingston Avenue and Fulton Street in both peak hours, with an average of 39 passengers per bus in the AM and 37 passengers per bus in the PM. In the southbound direction the maximum load point occurs at Graham Avenue and Grand Street in the AM peak hour and at Tompkins Avenue and Fulton Street in the PM. Southbound ridership averages 30 passengers per bus through the maximum load points in the AM peak hour and 29 passengers per bus in the PM.

B44

The B44, provides limited-stop service between Williamsburg Bridge Plaza and Knapp Street/Emmons Avenue in Sheepshead Bay. (Additional B44 local service is provided along portions of the route but not within the vicinity of the proposed action area.) Access to and from the terminus at Williamsburg Bridge Plaza is via Roebling Street. The maximum load point for northbound limited-stop buses occurs at New York Avenue and Church Avenue in both peak hours, and at Nostrand Avenue and Eastern Parkway in both peak hours for southbound buses. The number of northbound passengers per bus on this route averages 49 and 40 in the AM and PM peak hours, respectively. Southbound passengers per bus average 49 and 53, respectively.

B46

The B46, provides limited-stop service between Williamsburg Bridge Plaza and Kings Plaza in Marine Park. (Some B46 limited-stop buses terminate at Avenue H and Utica Avenue during rush hours. Additional B44 local service is provided along portions of the route but not within the vicinity of the proposed action area.) Access to and from the terminus at Williamsburg Bridge Plaza is via Broadway. The maximum load point for both northbound and southbound limited-stop buses occurs at Utica Avenue and Eastern Parkway in both peak hours. The number of northbound passengers per bus on this route averages 52 and 40 in the AM and PM peak hours, respectively. Southbound passengers per bus average 36 and 56, respectively.

B48

B48 service operates between Meeker/Gardner Avenues in Greenpoint and Flatbush Avenue/Lincoln Road in Lefferts Gardens. Within the study area, B48 buses primarily utilize Lorimer Street as well as Nassau Avenue. The maximum load point in the northbound direction occurs at Flatbush Avenue and Lincoln Road in the AM peak hour, with an average of 43 passengers per bus, and at Classon and DeKalb Avenues in the PM peak hour, with an average of 29 passengers per bus. The maximum load point in the

southbound direction occurs at Nassau Avenue and McGuinness Boulevard in the AM peak hour, with an average of 36 passengers per bus, and at Franklin and Flushing Avenues in the PM peak hour, with an average of 41 passengers per bus.

#### B60

B60 service operates between Williams Avenue/Flatlands Avenue in New Lots and Williamsburg Bridge Plaza. In the vicinity of the proposed action area, B60 buses primarily operate along South 5<sup>th</sup> Street and Broadway. The maximum load point in the northbound direction occurs at Wilson and Gates Avenues in the AM peak hour and Rockaway and East New York Avenues in the PM. Northbound ridership averages 52 passengers per bus in the AM and 31 in the PM. The maximum load point in the southbound direction occurs at Rockaway and Hegeman Avenues in both peak hours, with an average of 42 passengers per bus in the AM and 52 passengers per bus in the PM.

#### B61

B61 service operates between Van Brunt Street and Beard Street in Red Hook and Jackson Avenue and Queens Plaza South in Long Island City, Queens. In the vicinity of the proposed action area, B61 buses travel primarily along Bedford, Driggs and Manhattan Avenues as well as a portion of McGuinness Boulevard. The maximum load point in the northbound direction occurs at Atlantic Avenue and Hicks Street in the AM peak hour, with an average of 41 passengers per bus, and at York and Gold Streets in the PM peak hour, with an average of 45 passengers per bus. The maximum load point in the southbound direction occurs at Manhattan and Nassau Avenues in the AM peak hour, with an average of 40 passengers per bus, and at Atlantic Avenue and Hicks Street in the PM peak hour, with an average of 38 passengers per bus.

#### Q54

The Q54 operates between Williamsburg Bridge Plaza in Brooklyn and 171<sup>st</sup> Street/Jamaica Avenue in Jamaica, Queens, traveling primarily along Grand Street and Metropolitan Avenue. The maximum load point in the eastbound direction occurs at Metropolitan Avenue and Fresh Pond Road in the AM peak hour, with an average of 36 passengers per bus, and at Grand and Graham Streets in the PM peak hour, with an average of 44 passengers per bus. The maximum load point in the westbound direction occurs at Metropolitan Station in both peak hours, with an average of 44 passengers per bus in the AM and 32 in the PM peak hour.

#### Q59

The Q59 operates between Kent Avenue/Broadway in Williamsburg and 63<sup>rd</sup> Drive/Queens Boulevard in Rego Park. Within the study area, Q59 buses can be found operating primarily along Grand Street, Bedford and Driggs Avenues, and Broadway. The maximum load point in the eastbound direction occurs at Grand Avenue and Queens Boulevard in the AM peak hour, with an average of 39 passengers per bus, and at Metropolitan Bridge in the PM peak hour, with an average of 44 passengers per bus. The maximum load point in the westbound direction occurs at Grand and Flushing Avenues in the AM peak hour, with an average of 38 passengers per bus, and at Grand Avenue and Queens Boulevard in the PM peak hour, also with an average of 38 passengers per bus.

### ***NYCDOT Franchised Bus Services***

There are currently no subsidized bus routes operating under New York City Department of Transportation franchise in the vicinity of the proposed action area. One unsubsidized service, the B110, connects Williamsburg with Borough Park under an NYCDOT-franchise. This route, operated by Private Transportation, does not provide service in the vicinity of the proposed action area.

### **Water Taxi Service**

At present, there are no ferry or water taxi landings with regularly scheduled service located in proximity to the proposed action area. The only such service operating in the vicinity of Greenpoint and Williamsburg is a water taxi service provided by New York Water Taxi, Inc. (NYWT). During peak periods, this service connects a landing at Hunters Point (Long Island City) in Queens with Fulton Landing in Brooklyn, and landings at East 90<sup>th</sup> Street, East 34<sup>th</sup> Street and Pier 11 (Wall Street) in Manhattan. During the weekday midday and weekends, service is extended to stops on Manhattan's West Side. The boats currently operated by NYWT have a maximum capacity of 74 passengers and operate on an approximately 35-minute headway during the AM and PM peak periods.

### **Pedestrians**

The analysis of pedestrian conditions focuses on representative pedestrian elements where new trips generated by projected developments are expected to be most concentrated. These elements – sidewalks, corner areas and crosswalks – are primarily located in the vicinity of subway stations and major projected residential developments. As shown in Figure 17-3, they include corner areas and crosswalks along Manhattan Avenue at Nassau Avenue (adjacent to the Nassau Avenue subway station), and at Greenpoint Avenue and India Street (adjacent to the Greenpoint Avenue subway station). Along Bedford Avenue, the corner areas and crosswalks at the intersections of North 7<sup>th</sup> Street (adjacent to the Bedford Avenue subway station) and at North 6<sup>th</sup> Street are evaluated, along with the north and south sidewalks along North 6<sup>th</sup> and North 7<sup>th</sup> Streets between Bedford Avenue and Berry Street. These latter sidewalks would function as primary access corridors between the Bedford Avenue subway station and waterfront development. The analysis also includes sidewalks along Kent Avenue from North 4<sup>th</sup> to North 6<sup>th</sup> Streets, and along West Street between Huron and Freeman Streets. Both of these locations are adjacent to projected development sites with large residential components (Site 199 with 1,194 dwelling units and Site 3 with 2,351 dwelling units, respectively).

Analyzed sidewalks along Manhattan and Bedford Avenues typically range from 11 to 15 feet in width, as do crosswalks along these two corridors. Sidewalks along Kent Avenue and along West Street typically range from 9 to 15 feet in width.

Among analyzed pedestrian facilities in Greenpoint, demand was generally found to be heaviest in the immediate vicinity of subway station entrances. Two-way pedestrian volumes on crosswalks along Manhattan Avenue at Greenpoint Avenue and at India Street (near entrances to the Greenpoint Avenue station) were found to range from 70 to 455 persons per hour in the AM, and from 125 to 735 persons per hour in the PM. The proximity of bus stops for three local bus routes (the B24, B43 and B61) adds to the pedestrian demand at these intersections.

To the south at the intersection of Nassau and Manhattan Avenues adjacent to entrance stairs for the Nassau Avenue subway station, peak hour crosswalk volumes are somewhat lower, ranging from 135 to 410 persons per hour in each peak hour. To the west along the Greenpoint waterfront, existing peak hour pedestrian demand along the east and west sidewalks on West Street is relatively low. Fewer than 20 persons per hour were observed on any sidewalk in either peak hour in the vicinity of Green Street.

In Williamsburg, two-way pedestrian volumes on crosswalks along Bedford Avenue at North 6<sup>th</sup> and North 7<sup>th</sup> Streets were found to range from 50 to 640 in the AM peak hour, and from 90 to as high as 745 in the PM. The proximity of entrance stairs to the Bedford Avenue subway station (at North 7<sup>th</sup> Street) and stops for the B61 local bus route generate pedestrian demand at these facilities. Two-way pedestrian volumes on the sidewalks along North 7<sup>th</sup> Street between Bedford Avenue and Berry Street typically range from 100 to 315 in either peak hour. Volumes were found to be lower one block to the south along North 6<sup>th</sup> Street, with two-way flows of from 25 to 145 persons in either peak hour. As in Greenpoint, existing volumes along the Williamsburg waterfront were ~~to~~ found to be relatively low, with fewer than ten persons per hour on sidewalks along Kent Avenue in the vicinity of North 5<sup>th</sup> Street.

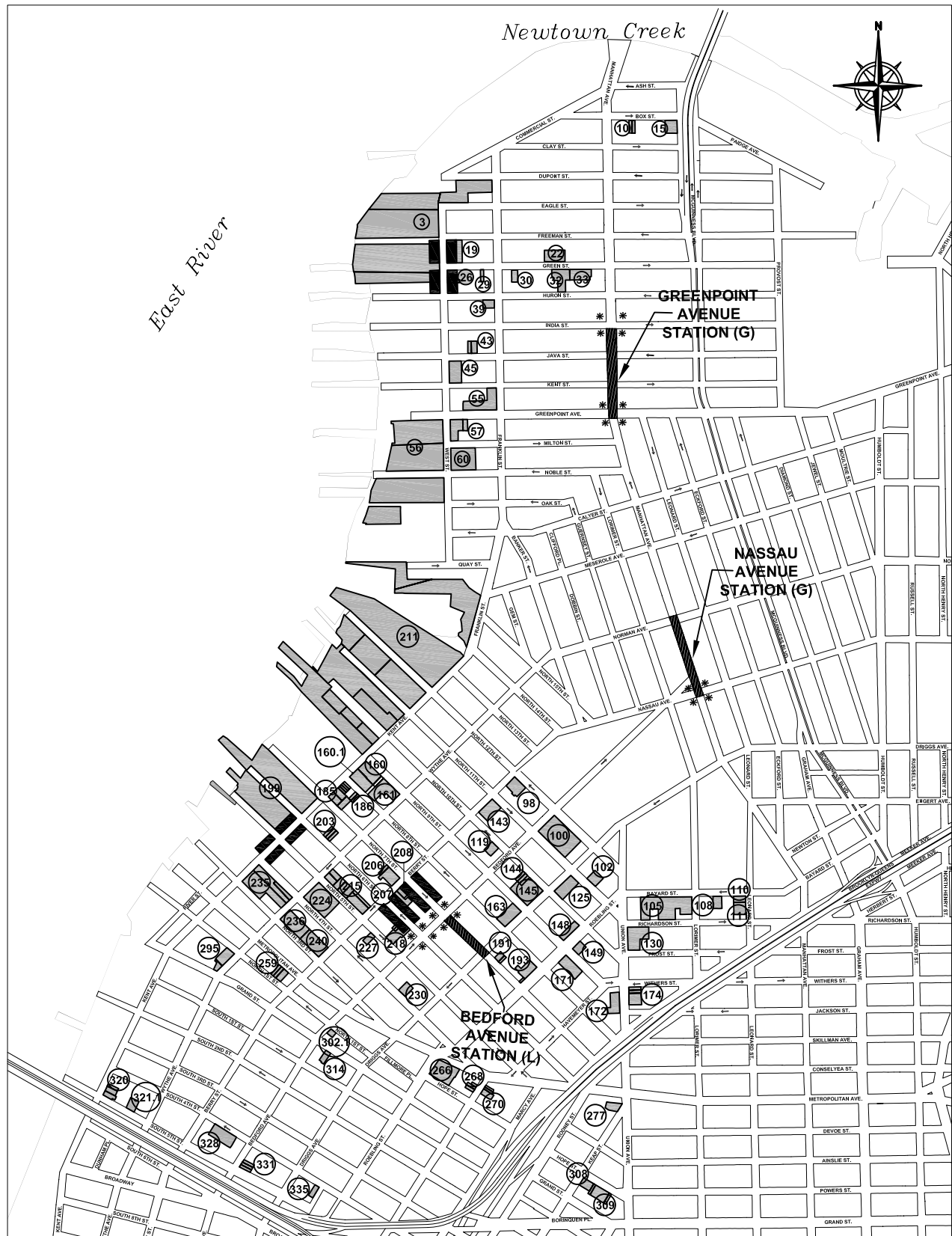
As discussed later in this chapter, the proposed action would generate fewer new walk, subway and bus trips in the midday peak hour than in either the AM or PM peak hours. The net increase in combined walk, subway and bus trips would total 4,879, in the AM peak hour, 4,572 in the midday and 7,716 in the PM peak hour. Transit-related pedestrian trips would comprise 68 percent of total walk trips in the AM peak hour, 53 percent in the PM and 41 percent in the midday. With a higher proportion of transit-related trips in the AM and PM than in the midday, trips in the AM and PM would be more concentrated on specific corridors, especially in the vicinity of subway station entrances and bus stops. As destinations for walk-only trips are typically more varied (e.g., locally-based work, shopping, recreation, etc.), walk-only trips generated by the proposed action would be dispersed among pedestrian facilities throughout the 184 blocks comprising the proposed action area. With a higher proportion of walk-only trips in the midday, midday pedestrian demand would be more dispersed than in either the AM or PM peak hours. With pedestrian demand heavier and more concentrated in the AM and PM than in the midday, midday impacts over and above those identified for the AM and PM would be unlikely. The analysis of pedestrian impacts focuses on those corridors that could potentially be impacted by the proposed action in the AM and PM peak hours.

Peak 15-minute pedestrian flow conditions during the AM and PM peak hours were analyzed using the *Highway Capacity Manual* methodology. Under this methodology, the congestion level of pedestrian facilities is determined by considering pedestrian volume, measuring the sidewalk or crosswalk width, determining the available pedestrian capacity and developing a ratio of existing volume flows to capacity conditions. The resulting ratio is then compared with level of service standards for pedestrian flow which define a qualitative relationship at a certain pedestrian traffic concentration level. The evaluation of street crosswalks and corner areas is more complicated as these spaces cannot be treated as corridors due to the time incurred waiting for traffic lights. To effectively evaluate these facilities, a "time-space" analysis methodology is employed which takes into consideration the traffic light cycle at intersections. In analyzing corner areas, allowance is also made for the presence of light poles, waste receptacles, and other pieces of sidewalk furniture that may occupy space otherwise available for pedestrian queuing and movement.

Level of service standards are based on the average area available per pedestrian during the analysis period, typically expressed as a 15-minute peak period. Level of service (LOS) grades from A to F are assigned, with LOS A representative of free flow conditions without pedestrian conflicts and LOS F



## Analyzed Pedestrian Facilities

**LEGEND:**

Projected Development Site



Analyzed Corner Area and Crosswalks



Subway Station



Analyzed Sidewalk

depicting significant capacity limitations and inconvenience. Table 17-8 defines the LOS criteria for pedestrian crosswalk/corner area and sidewalk conditions, as based on the *Highway Capacity Manual*.

The analysis of sidewalk conditions includes a “platoon” factor in the calculation of pedestrian flow to more accurately estimate the dynamics of walking. “Platooning” is the tendency of pedestrians to move in bunched groups or “ platoons” once they cross a street where cross traffic required them to wait. Platooning generally results in a level of service one level poorer than that determined for average flow rates.

**TABLE 17-8**  
**Pedestrian Crosswalk/Corner Area and**  
**Sidewalk Levels of Service Descriptions\***

Level of Service		Crosswalk/Corner Area Criteria (sq. ft./ped.)	Sidewalk Criteria (ped./min./ft.)
A	(Unrestricted)	$\geq 60$	$\leq 5$
B	(Slightly restricted)	$\geq 40$	$\leq 7$
C	(Restricted but fluid)	$\geq 24$	$\leq 10$
D	(Restricted, need to continuously alter walking stride and direction)	$\geq 15$	$\leq 15$
E	(Severely restricted)	$\geq 8$	$\leq 23$
F	(Forward progress only by shuffling; no reverse movement possible)	$< 8$	$> 23$
<b>Notes:</b> * based on average conditions for 15 minutes. Source: <i>Highway Capacity Manual</i> .			

Tables 17-9 through 17-11 show the results of the analyses of existing sidewalk, corner area and crosswalk conditions for the AM, and PM peak hours. As shown in Table 17-9, all analyzed sidewalks currently operate at LOS A under platoon conditions in both the AM and PM peak hours. As shown in Tables 17-10 and 17-11, all analyzed corner areas also operate at LOS A in both peak hours, while all analyzed crosswalks currently operate at LOS B or better in both the AM and PM under Existing conditions.

### **C. THE FUTURE WITHOUT THE PROPOSED ACTION (NO-ACTION)**

Between 2003 and 2013, it is expected that the demand at analyzed transit and pedestrian facilities would increase due to long-term background growth as well as development that could occur pursuant to existing zoning or approved BSA variances on 30 of the 76 projected development sites. Development on projected development sites is expected to consist of a total of approximately 866 new dwelling units and 68,500 square feet of new commercial/retail space. In order to forecast the future conditions without the

**TABLE 17-9**  
**Existing Sidewalk Conditions**

Blockface	Side of Street	Effective Sidewalk Width (feet)	Peak 15 Min. Volumes		Average Walkway				Platoon Walkway				
					Persons per Foot per Min. (PFM)		Level of Service		Persons per Foot per Min. (PFM)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
Williamsburg													
North 6th Street Bedford Avenue to Berry Street	North	11.0	29	45	0.2	0.3	A	A	4.2	4.3	A	A	
	South	11.0	9	26	0.1	0.2	A	A	4.2	4.2	A	A	
North 7th Street Bedford Avenue to Berry Street	North	11.0	32	35	0.2	0.2	A	A	4.2	4.2	A	A	
	South	11.0	98	62	0.6	0.4	A	A	4.6	4.4	A	A	
Kent Avenue North 5th Street to North 6th Street	East	6.7	1	1	0.1	0.1	A	A	4.1	4.1	A	A	
	West	7.4	0	0	0.0	0.0	A	A	4.0	4.0	A	A	
Kent Avenue North 4th Street to North 5th Street	East	6.0	1	3	0.1	0.1	A	A	4.1	4.1	A	A	
	West	7.4	2	0	0.1	0.0	A	A	4.1	4.0	A	A	
Greenpoint													
West Street Green Street to Freeman Street	East	11.0	2	1	0.1	0.1	A	A	4.1	4.1	A	A	
	West	8.3	0	1	0.0	0.1	A	A	4.0	4.1	A	A	
West Street Huron Street to Green Street	East	5.3	5	1	0.1	0.1	A	A	4.1	4.1	A	A	
	West	10.3	1	1	0.1	0.1	A	A	4.1	4.1	A	A	

**TABLE 17-10**  
**Existing Corner Area Conditions**

Intersection	Corner	Curb Radii (Feet)	Peak 15 Min. Volumes		Average Ped. Space (SF/Ped)		Level of Service	
			AM	PM	AM	PM	AM	PM
Williamsburg								
Bedford Avenue & North 6th Street (1)	Southwest	12	4	10	<u>444</u>	<u>277</u>	A	A
	Southeast	12	3	4	<u>191</u>	<u>158</u>	A	A
	Northwest	12	16	29	<u>241</u>	<u>221</u>	A	A
	Northeast	12	27	23	<u>156</u>	<u>138</u>	A	A
Bedford Avenue & North 7th Street	Southwest	12	9	12	275	195	A	A
	Southeast	12	268	232	99	89	A	A
	Northwest	12	5	11	357	211	A	A
	Northeast	12	231	218	117	93	A	A
Greenpoint								
Manhattan Avenue & India Street	Southwest	12	16	27	176	132	A	A
	Southeast	12	3	2	202	176	A	A
	Northwest	12	4	10	228	151	A	A
	Northeast	12	6	8	256	195	A	A
Manhattan Avenue & Greenpoint Avenue	Southwest	12	17	65	190	81	A	A
	Southeast	12	10	15	155	63	A	A
	Northwest	12	65	80	173	106	A	A
	Northeast	12	7	11	<u>226</u>	<u>122</u>	A	A
Manhattan Avenue & Nassau Avenue	Southwest	12	11	21	214	127	A	A
	Southeast	12	7	16	216	<u>114</u>	A	A
	Northwest	12	14	14	<u>273</u>	<u>194</u>	A	A
	Northeast	12	40	108	212	<u>103</u>	A	A

Notes:

(1) The intersection of Bedford Avenue and N. 6th Street is unsignalized. As the HCM methodology for corner and crosswalk analyses is only applicable to signalized intersections, a signal timing plan based on the adjacent intersection at N. 7th Street was assumed in order to analyze corner and crosswalk conditions at this location.

**TABLE 17-11**  
**Existing Crosswalk Conditions**

Intersection	Crosswalk	Curb to Curb Street Width (Ft.)	Crosswalk Width (Ft.)	Peak 15 Min. Volumes		Conflicting Vehicle Volume with Pedestrians (Veh/hour)		With Vehicles			
								Average Ped. Space (SF/Ped)		Level of Service	
				AM	PM	AM	PM	AM	PM	AM	PM
Williamsburg											
Bedford Avenue & North 6th Street (1)	North	30.0	14.0	45	44	131	86	<u>106</u>	<u>121</u>	A	A
	South	30.0	14.0	16	29	0	0	<u>414</u>	<u>225</u>	A	A
	East	30.0	14.0	199	232	0	0	<u>97</u>	<u>82</u>	A	A
	West	30.0	12.0	77	115	30	71	<u>225</u>	<u>143</u>	A	A
Bedford Avenue & North 7th Street	North	30.0	<u>12.0</u>	65	87	35	45	75	53	A	B
	South	30.0	14.5	93	99	0	0	67	63	A	A
	East	30.0	14.5	62	128	91	71	330	156	A	A
	West	30.0	14.5	45	98	0	0	486	217	A	A
Greenpoint											
Manhattan Avenue & India Street	North	50.0	<u>13.0</u>	22	39	20	20	<u>450</u>	<u>250</u>	A	A
	South	50.0	11.5	60	56	20	20	140	151	A	A
	East	30.0	<u>13.0</u>	119	146	45	40	<u>121</u>	<u>97</u>	A	A
	West	30.0	11.4	142	204	0	0	89	59	A	B
Manhattan & Greenpoint Avenues	North	50.0	14.8	40	65	55	76	375	224	A	A
	South	35.0	13.5	38	115	55	93	342	102	A	A
	East	30.0	14.5	87	169	91	136	143	66	A	A
	West	50.0	13.8	128	229	55	86	103	53	A	B
Manhattan & Nassau Avenues	North	36.0	<u>11.5</u>	43	51	60	90	<u>255</u>	<u>208</u>	A	A
	South	36.0	<u>11.0</u>	68	102	48	71	<u>152</u>	<u>96</u>	A	A
	East	30.0	<u>11.0</u>	57	127	52	65	<u>174</u>	<u>71</u>	A	A
	West	30.0	<u>11.0</u>	57	94	0	0	<u>183</u>	<u>106</u>	A	A

Notes: \_\_\_\_\_

(1) The intersection of Bedford Avenue and N. 6th Street is unsignalized. As the HCM methodology for corner and crosswalk analyses is only applicable to signalized intersections, a signal timing plan based on the adjacent intersection at N. 7th Street was assumed in order to analyze corner and crosswalk conditions at this location.

proposed action (the No-Action condition), any residential development project with 200 or more new housing units and any development with a retail/commercial component listed in Table 1-1 in Chapter 1, “Project Description,” and Table 2-3 and shown in Figure 2-6 in Chapter 2, “Land Use, Zoning and Public Policy,” were considered, in addition to an annual background growth rate of one percent per year applied to existing transit and pedestrian demand for the 2003 through 2013 period. This background growth rate is applied to account for smaller projects and general increases in travel demand not attributable to specific development projects. Individual sites which would introduce fewer than 200 new dwelling units to the study area and have no retail component are assumed to be included in background growth. Although none of the projected development sites would include 200 or more new dwelling units, five have a proposed retail/commercial component and are considered separate No-Action sites. These sites, described in more detail in Chapter 16, “Traffic and Parking,” include Sites 3 and 55 in Greenpoint and Sites 102, 130 and 207 in Williamsburg.

Along with development on projected development sites, NYCDOT has identified four No-Action projects that are in the vicinity of the proposed action area. These projects, which were discussed in Chapter 16, “Traffic and Parking” and include the Kedem and Schaefer Brewery sites, the Domsey clothing warehouse and 184 Kent Avenue, were also considered as discreet sites for the purposes of the transit and pedestrian analyses.

In addition to increased demand from projected development sites and No-Action projects, improvements planned as part of the New York City Department of Transportation’s Bedford Avenue Station Subway-Sidewalk Interface Project are expected to alter the physical configuration of pedestrian facilities at the intersection of Bedford Avenue and North 7<sup>th</sup> Street during the 2003 through 2013 period. Specifically, a transit neckdown would be installed along the south curb of North 7<sup>th</sup> Street adjacent to the subway entrance stair on the southeast corner of the intersection. This neckdown would widen the sidewalk by approximately eight feet to accommodate the installation of bicycle racks at curbside and would provide additional circulation space at the southeast corner. Widening the sidewalk by essentially eliminating the parking lane would narrow the roadway by a corresponding amount, thereby shortening the crossing distance for pedestrians on the east crosswalk on North 7<sup>th</sup> Street. The analysis of No-Action pedestrian conditions at this intersection incorporates these changes.

Lastly, it should be noted that Brooklyn Community Board No. 1, encompassing both Greenpoint and Williamsburg, has prepared and issued separate “197-a Plans” for each of these communities (see discussion in Chapter 2, “Land Use, Zoning and Public Policy.” Section 197-a of the New York City Charter grants community boards and other entities the power to sponsor plans for the “development, growth, and improvement” of their communities. Once adopted by the New York City Council, these plans serve as policy guides for subsequent actions by City agencies. The 197-a Plans for Greenpoint and Williamsburg, which were adopted by the City Council in January 2002, incorporate a number of transit-related recommendations, including:

- exploring the feasibility of a light rail/trolley along Manhattan Avenue linking Red Hook, Brooklyn and Queens;
- expanding bus services to and along the waterfront (e.g., Franklin Street/Kent Avenue);
- encouraging the establishment of a ferry service and water taxi linking Greenpoint and Williamsburg to the rest of the New York waterfront; and

- providing increased subway service on the Crosstown (G) Line and the Canarsie/14<sup>th</sup> Street (L) Line.

While these 197-a Plans serve as policy guides for City agencies, they do not necessarily reflect official planning or funding commitments by the respective agencies. However, as discussed below, improvements to the train control system on the Canarsie/14<sup>th</sup> Street Line (L) are currently being implemented by NYC Transit and are expected to be operational by the 2013 analysis year. (Improvements to the control system on the Crosstown Line (G) would follow in later years.) No other substantive changes to analyzed transit or pedestrian facilities are expected during the 2003 through 2013 period.

The following sections describe how the growth in travel demand in Greenpoint and Williamsburg are expected to affect transit and pedestrian facilities in the future without the proposed action.

### Subway Stations

During the 2003 through 2013 period, demand at the Bedford Avenue (L), Greenpoint Avenue (G) and Nassau Avenue (G) stations is expected to increase as a result of new development and long-term background growth. Tables 17-12 through 17-14 show the expected peak 15-minute volumes as well as v/c ratios and levels of service at analyzed subway station stairs and fare arrays in the 2013 future without the proposed action. As shown in Tables 17-12 through 17-14, in the future without the proposed action, all analyzed stairways and fare arrays at the three subway stations serving the proposed action area would operate at acceptable LOS C or better in both the AM and PM peak hours. At Bedford Avenue, Stair S4 would operate at LOS C in the AM compared to LOS B under Existing conditions. Stair S3 would similarly operate at LOS C in the PM compared to LOS B under Existing conditions. All other stairways and fare arrays at this station would remain at their existing levels of service in the 2013 No-Action condition, as would all processors at the Greenpoint Avenue and Nassau Avenue stations.

### Subway Line Haul

By 2013, new developments combined with general background growth would increase line haul demand on the Canarsie/14<sup>th</sup> Street (L) Line and on the Crosstown (G) Line. The Canarsie/14<sup>th</sup> Street Line has also been selected by NYC Transit as the first line in the system to be equipped with a Communication-Based Train Control (CBTC) system. This more advanced system of train control, which would result in more efficient operation and can allow for shorter headways with less wayside equipment than conventional signal systems, is expected to be installed on all subway lines when their control systems require replacement, assuming successful implementation of CBTC on the Canarsie/14<sup>th</sup> Street Line. CBTC can also help keep riders better informed of their commute time by providing up-to-the-minute travel conditions on electronic screens and public address systems.

Table 17-15 shows the anticipated line haul conditions at the peak load points on the Canarsie/14<sup>th</sup> Street and Crosstown Lines in the 2013 future without the proposed action. As shown in Table 17-15, in the AM peak hour, without adjustments in service, demand on the Manhattan-bound Canarsie/14<sup>th</sup> Street Line would exceed capacity by approximately 17 percent, with L trains operating at a v/c ratio of 1.17 compared to 1.05 under Existing conditions. In the PM peak hour, Brooklyn-bound L trains would continue to have available capacity, with a v/c ratio of 0.75 versus 0.67 under Existing conditions. G trains on the Crosstown Line would continue to operate below capacity in both peak hours with a v/c ratio

**TABLE 17-12**  
**2013 No-Action Subway Station Analysis**  
**Bedford Avenue Avenue (L) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	Peak 15 Minute Volume (4)	PFM (5)	Volume to Capacity Ratio	LOS
S4	Stairway @ NE Corner Bedford Avenue/ N. 7th Street	AM	3.20	480	350	7.30	0.73	C
		PM	3.20	480	283	5.89	0.59	B
S3	Stairway @ SE Corner Bedford Avenue/ N. 7th Street	AM	3.20	480	416	8.67	0.87	C
		PM	3.20	480	396	8.25	0.83	C
S2	Stairway @ NE Corner Driggs Avenue/ N. 7th Street	AM	3.20	480	59	1.23	0.12	A
		PM	3.20	480	68	1.42	0.14	A
S1	Stairway @ SE Corner Driggs Avenue/ N. 7th Street	AM	3.20	480	225	4.69	0.47	A
		PM	3.20	480	150	3.13	0.31	A

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	Peak 15 Min. Volume (4)	Volume to Capacity Ratio	LOS
H-9	Fare Array Bedford Avenue/ N. 7th Street 5 entry/exit turnstiles	AM	2,400	766	0.32	B
		PM	2,400	679	0.28	B
H-1	Fare Array Driggs Avenue/N. 7th Street 1 high-entry/exit turnstile 1 high revolving exit gate	AM	750	284	0.38	B
		PM	750	218	0.29	B

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.
- (2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
- (3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).
- (4) Assumes one percent per year background growth for 2002 through 2013 period.
- (5) Persons per foot width of stairway per minute.
- (6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYCT guidelines.



**TABLE 17-13**  
**2013 No-Action Subway Station Analysis**  
**Greenpoint Avenue (G) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	Peak 15 Minute Volume (4)	PFM (5)	Volume to Capacity Ratio	LOS
S4	Stairway @ SE Corner Manhattan Avenue/ India Street	AM	3.53	530	106	2.00	0.20	A
		PM	3.53	530	109	2.06	0.21	A
S5	Stairway @ SW Corner Manhattan Avenue/ India Street	AM	3.53	530	112	2.12	0.21	A
		PM	3.53	530	99	1.87	0.19	A
S2	Stairway @ SE Corner Manhattan Ave. / Greenpoint Ave.	AM	4.40	660	63	0.95	0.10	A
		PM	4.40	660	91	1.38	0.14	A
S3	Stairway @ NW Corner Manhattan Ave. / Greenpoint Ave.	AM	3.53	530	112	2.12	0.21	A
		PM	3.53	530	129	2.44	0.24	A
S1	Stairway @ SW Corner Manhattan Ave. / Greenpoint Ave.	AM	4.40	660	88	1.33	0.13	A
		PM	4.40	660	117	1.77	0.18	A

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	Peak 15 Min. Volume (4)	Volume to Capacity Ratio	LOS
H-1	Northbound Fare Array Manhattan Avenue/India Street					
		1 entry/exit turnstiles	AM 750	106	0.14	A
		1 high revolving exit gates	PM 750	109	0.15	A
H-2	Southbound Fare Array Manhattan Avenue/India Street					
		2 entry/exit turnstiles	AM 1,500	112	0.07	A
		2 high revolving exit gates	PM 1,500	99	0.07	A
N-405	Greenpoint Avenue Fare Array Manhattan Ave./Greenpoint Ave.					
		4 entry/exit turnstiles	AM 1,920	263	0.14	A
			PM 1,920	337	0.18	A

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.
- (2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
- (3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).
- (4) Assumes 1.0 percent per year background growth for 2002 through 2013 period.
- (5) Persons per foot width of stairway per minute.
- (6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYCT guidelines.

**TABLE 17-14**  
**2013 No-Action Subway Station Analysis**  
**Nassau Avenue (G) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	Peak 15 Minute Volume (4)	PFM (5)	Volume to Capacity Ratio	LOS
S4	Stairway @ NE Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	122	2.30	0.23	A
		PM	3.53	530	135	2.55	0.25	A
S2	Stairway @ SE Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	233	4.40	0.44	A
		PM	3.53	530	166	3.14	0.31	A
S3	Stairway @ NW Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	6	0.11	0.01	A
		PM	3.53	530	9	0.17	0.02	A
S1	Stairway @ SW Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	35	0.66	0.07	A
		PM	3.53	530	42	0.79	0.08	A
S6	Stairway @ NE Corner Manhattan Avenue/ Norman Ave.	AM	3.53	530	144	2.72	0.27	A
		PM	3.53	530	87	1.64	0.16	A
S5	Stairway @ NW Corner Manhattan Avenue/ Norman Ave.	AM	3.53	530	71	1.34	0.13	A
		PM	3.53	530	81	1.53	0.15	A

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	Peak 15 Min. Volume (4)	Volume to Capacity Ratio	LOS
H-2	Northbound Fare Array Manhattan Ave./Norman Ave. 1 entry/exit turnstiles	AM	300	144	0.48	C
		PM	300	87	0.29	B
H-1	Southbound Fare Array Manhattan Ave./Norman Ave. 1 entry/exit turnstiles 1 high-revolving exit gate	AM	750	71	0.09	A
		PM	750	81	0.11	A
N-408A	Nassau Avenue Fare Array Manhattan Ave./Nassau Ave. 1 entry/exit turnstiles 1 high-revolving exit gate 4 entry/exit turnstiles	AM	2,670	396	0.15	A
		PM	2,670	352	0.13	A

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.
- (2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
- (3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).
- (4) Assumes 1.0 percent per year background growth for 2002 through 2013 period.
- (5) Persons per foot width of stairway per minute.
- (6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYCT guidelines.

**TABLE 17-15**  
**2013 No-Action Subway Line Haul Conditions**  
**Canarsie/14<sup>th</sup> Street (L) Line and Crosstown (G) Line**

No-Action Conditions at Existing Service Levels							
Route	Peak Hour	Peak Direction	Trains per Hour (1)	Cars per Hour (1)	Available Capacity (2)	Passengers per Hour (3)	V/C Ratio (4)
<b>L</b>	AM	Manhattan-Bound	15	120	17,400	20,351	1.17
	PM	Brooklyn-Bound	15	120	17,400	12,969	0.75
<b>G</b>	AM	Brooklyn-Bound	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>4,631</u>	<u>0.83</u>
	PM	Queens-Bound	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>2,524</u>	<u>0.45</u>
No-Action Conditions With Potential Service Adjustments							
Route	Peak Hour	Peak Direction	Trains per Hour (1)	Cars per Hour (1)	Available Capacity (2)	Passengers per Hour (3)	V/C Ratio (4)
<b>L</b>	AM	Manhattan-Bound	18	144	20,880	20,351	0.97
	PM	Brooklyn-Bound	15	120	17,400	12,969	0.75
<b>G</b>	AM	Brooklyn-Bound	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>4,631</u>	<u>0.83</u>
	PM	Queens-Bound	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>2,524</u>	<u>0.45</u>
<b>Notes:</b> (1) Source: NYC Transit 2003 peak load point data. (2) Capacity based on 145 passengers/car for 60' cars and 175 passengers/car for 75' cars as per NYC Transit subway car loading guidelines. <u>L trains operate with eight 60'-cars; G trains with four 75'-cars.</u> (3) Projected No-Action volumes based on NYC Transit 2003 peak load point data increased to reflect one percent per year background growth and demand from No-Action sites. (4) Volume-to-capacity ratio.							

of 0.83 in the Brooklyn-bound direction in the AM and a v/c ratio of 0.45 in the Queens-bound direction in the PM.

As standard practice, New York City Transit routinely conducts ridership counts and adjusts service frequency to meet its service criteria, within fiscal and operating constraints. Table 17-15 therefore also shows subway line haul conditions in the Future No-Action with service levels increased to eliminate the over-capacity conditions on the Canarsie/14th Street Line in the AM peak hour assuming sufficient cars are available to accommodate the additional service. As shown in Table 17-15, with the addition of three Manhattan-bound trains in the AM peak hour, the Canarsie/14<sup>th</sup> Street (L) Line would operate slightly below capacity with a v/c ratio of 0.97.

## Bus Service

During the 2003 through 2013 period, demand on NYC Transit local bus routes serving Greenpoint and Williamsburg is expected to increase as a result of new developments and general background growth. Table 17-16 shows the estimated peak hour ridership at the maximum load point of each of the NYC Transit local bus routes serving the proposed action area in Greenpoint and Williamsburg in the 2013

**TABLE 17-16**  
**2013 No-Action Local Bus Conditions**

Peak Hour (1)	Route	Peak Direction	Maximum Load Point	Peak Hour Buses	Peak Hour Passengers (2)	Average Passengers Per Bus	Available Capacity (3)	Notes
AM	B24	EB	Metropolitan Ave./Graham Ave.	3	71	24	139	
		WB	Metropolitan Ave./Graham Ave.	3	107	36	103	
	B39	EB	Delancey St./Allen St.	4	60	15	220	
		WB	Williamsburg Bridge Plaza	4	174	44	106	
	B43	NB	Kingston Ave./Fulton St.	6	259	43	161	
		SB	Graham Ave./Grand St.	7	231	33	259	
	B44	NB	New York Ave./Church Ave.	10	548	55	152	(4)
		SB	Nostrand Ave./Eastern Parkway	9	537	60	93	(4)
	B46	NB	Utica Ave./Eastern Parkway	14	801	57	179	(4)
		SB	Utica Ave./Eastern Parkway	13	536	41	374	(4)
	B48	NB	Flatbush Ave./Lincoln Road	6	282	47	138	
		SB	Nassau Ave./McGuinness Blvd.	6	241	40	179	
	B60	NB	Wilson Ave./Gates Ave.	10	579	58	121	
		SB	Rockaway Blvd./Hegeman Ave.	7	337	48	153	
	B61	NB	Atlantic Ave./Hicks St.	7	324	46	166	
		SB	Manhattan Ave./Nassau Ave.	8	353	44	207	
	Q54	EB	Metropolitan Ave./Fresh Pond Rd.	6	241	40	179	
		WB	Metropolitan Station	8	389	49	171	
Q59	EB	Grand Ave./Queens Blvd.	5	217	43	133		
	WB	Grand Ave./Flushing Ave.	5	210	42	140		
PM	B24	EB	Metropolitan Ave./Graham Ave.	3	66	22	144	
		WB	Greenpoint Ave./47th St.	3	67	22	143	
	B39	EB	Delancey St./Allen St.	4	236	59	44	
		WB	Williamsburg Bridge Plaza	4	57	14	223	
	B43	NB	Kingston Ave./Fulton St.	6	246	41	174	
		SB	Tompkins Ave./Fulton St.	6	194	32	226	
	B44	NB	New York Ave./Church Ave.	8	376	47	184	(4)
		SB	Nostrand Ave./Eastern Parkway	9	523	58	107	(4)
	B46	NB	Utica Ave./Eastern Parkway	10	450	45	250	(4)
		SB	Utica Ave./Eastern Parkway	13	797	61	113	(4)
	B48	NB	Classon Ave./DeKalb Ave.	4	126	32	154	
		SB	Franklin Ave./Flushing Ave.	5	225	45	125	
	B60	NB	Rockaway Blvd./East NY Ave.	6	209	35	211	
		SB	Rockaway Ave./Hegeman Ave.	6	345	58	75	
	B61	NB	York St./Gold St.	6	323	54	97	
		SB	Atlantic Ave./Hicks St.	6	255	43	165	
	Q54	EB	Grand St./Graham St.	6	291	49	129	
		WB	Metropolitan Station	6	209	35	211	
	Q59	EB	Metropolitan Bridge	4	198	50	82	
		WB	Grand Ave./Queens Blvd.	4	167	42	113	
Notes: (1) Peak Hours: weekday 8-9 AM and 5-6 PM. (2) Assumes 1.0% per year background growth plus demand from No-Action sites. (3) Available capacity based on a maximum of 65 passengers for a standard 40-seat bus. (4) Combined local and limited service.								

future without the proposed action. As shown in Table 17-16, all analyzed local bus routes are expected to continue to operate with available capacity at their maximum load points in both peak periods in the future without the proposed action.

## Water Taxi Service

The installation of a new water taxi landing along the Greenpoint waterfront is currently under consideration by the City. In addition, a new water taxi landing has been proposed for the Schaeffer Brewery site along Kent Avenue between South 8<sup>th</sup> and South 9<sup>th</sup> Streets in Williamsburg. One or both of these landings may potentially be developed by 2013, however, no operator has as yet been identified to provide service at either location.

## Pedestrians

During the 2003 through 2013 period, it is anticipated that demand at analyzed sidewalks, corner areas and crosswalks would increase as a result of new development and general background growth (estimated at one percent per year). It is also anticipated that, as discussed above, NYCDOT would implement its Bedford Avenue Station Subway-Sidewalk Interface Project, increasing pedestrian spaces at the intersection of Bedford Avenue and North 7<sup>th</sup> Street. Lastly, it is anticipated that during this period approximately 95 percent of the sidewalk pavement along Kent Avenue and Franklin Street would have been reconstructed, with ADA-compliant pedestrian ramps at all corners, as part of NYCDDC's planned reconstruction of the Kent Avenue/Franklin Street corridor. Tables 17-17 through 17-19 show the results of the analyses of sidewalk, corner area and crosswalk conditions for the AM and PM peak hours in the future without the proposed action. As shown in Table 17-17, all analyzed sidewalks would continue to operate at LOS A under platoon conditions in both the AM and PM peak hours in the 2013 future without the proposed action. As shown in Tables 17-18 and 17-19, all analyzed corner areas and crosswalks would continue to operate at LOS B or better in both periods.

## D. THE FUTURE WITH THE PROPOSED ACTION (WITH-ACTION)

This section provides an analysis of transit and pedestrian conditions in the future with the proposed action (the With-Action condition). As discussed in Chapter 1, "Project Description," the proposed action is projected to stimulate approximately 7.8 million square feet of new residential and retail/commercial development under both Scenario A and Scenario B. Additionally, under Scenario A, a 27.8 acre waterfront park would be mapped to the west of Kent Avenue from Bushwick Inlet on the north to North 9<sup>th</sup> Street on the South. Scenario B would provide a smaller park (approximately 15.9 acres). As described in Chapter 1, "Project Description," Scenarios A and B are very similar, except that under Scenario B, a 1,100 megawatt power plant is assumed to be an approved No-Action development occupying the Bayside Fuel site, and this power plant would remain in the future with the proposed action. Therefore, the net changes in residential and retail/commercial development for Scenario B would be the same as those for Scenario A, only the proposed park would be smaller. As Scenario A includes a larger, regional, park, it constitutes the worst-case transportation condition for transportation analysis purposes.

**TABLE 17-17**  
**2013 No-Action Sidewalk Conditions**

Blockface	Side of Street	Effective Sidewalk Width (feet)	Peak 15 Min. Volumes		Average Walkway				Platoon Walkway			
					Persons per Foot per Min. (PFM)		Level of Service		Persons per Foot per Min. (PFM)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Williamsburg												
North 6th Street Bedford Avenue to Berry Street	North	11.0	39	61	0.2	0.4	A	A	4.2	4.4	A	A
	South	11.0	14	34	0.1	0.2	A	A	4.2	4.2	A	A
North 7th Street Bedford Avenue to Berry Street	North	11.0	36	39	0.2	0.2	A	A	4.2	4.2	A	A
	South	11.0	117	83	0.7	0.5	A	A	4.7	4.5	A	A
Kent Avenue North 5th Street to North 6th Street	East	6.7	14	25	0.1	0.3	A	A	4.1	4.3	A	A
	West	7.4	12	23	0.1	0.2	B	A	4.1	4.2	A	A
Kent Avenue North 4th Street to North 5th Street	East	6.0	13	25	0.1	0.3	A	A	4.1	4.3	A	A
	West	7.4	23	34	0.2	0.3	A	A	4.2	4.3	A	A
Greenpoint												
West Street Green Street to Freeman Street	East	11.0	2	1	0.1	0.1	A	A	4.1	4.1	A	A
	West	8.3	0	1	0.0	0.1	A	A	4.0	4.1	A	A
West Street Huron Street to Green Street	East	5.3	6	1	0.1	0.1	A	A	4.1	4.1	A	A
	West	10.3	1	1	0.1	0.1	A	A	4.1	4.1	A	A

**TABLE 17-18**  
**2013 No-Action Corner Area Conditions**

Intersection	Corner	Curb Radii (Feet)	Peak 15 Min. Volumes		Average Ped. Space (SF/Ped)		Level of Service	
			AM	PM	AM	PM	AM	PM
Williamsburg								
Bedford Avenue & North 6th Street (1)	Southwest	12	4	11	383	243	A	A
	Southeast	12	3	4	157	129	A	A
	Northwest	12	18	32	254	190	A	A
	Northeast	12	30	26	129	112	A	A
Bedford Avenue & North 7th Street	Southwest	12	10	13	233	163	A	A
	Southeast	12	320	296	137	121	A	A
	Northwest	12	6	12	319	190	A	A
	Northeast	12	255	241	106	84	A	A
Greenpoint								
Manhattan Avenue & India Street	Southwest	12	18	30	158	119	A	A
	Southeast	12	3	2	182	158	A	A
	Northwest	12	4	11	207	136	A	A
	Northeast	12	7	9	231	176	A	A
Manhattan Avenue & Greenpoint Avenue	Southwest	12	19	71	171	72	A	A
	Southeast	12	11	17	140	57	A	B
	Northwest	12	71	88	155	94	A	A
	Northeast	12	8	12	200	108	A	A
Manhattan Avenue & Nassau Avenue	Southwest	12	12	23	192	114	A	A
	Southeast	12	8	18	193	103	A	A
	Northwest	12	16	16	243	173	A	A
	Northeast	12	45	119	188	93	A	A

**Notes:**

(1) The intersection of Bedford Avenue and N. 6th Street is unsignalized. As the HCM methodology for corner and crosswalk analyses is only applicable to signalized intersections, a signal timing plan based on the adjacent intersection at N. 7th Street was assumed in order to analyze corner and crosswalk conditions at this location.

**TABLE 17-19**  
**2013 No-Action Crosswalk Conditions**

Intersection	Crosswalk	Curb to Curb Street Width (Ft.)	Crosswalk Width (Ft.)	Peak 15 Min. Volumes		Conflicting Vehicle Volume with Pedestrians (Veh/15min)		With Vehicles			
								Average Ped. Space (SF/Ped)		Level of Service	
				AM	PM	AM	PM	AM	PM	AM	PM
Williamsburg											
Bedford Avenue & North 6th Street (1)	North	30.0	14.0	57	59	145	95	<u>79</u>	<u>87</u>	A	A
	South	30.0	14.0	22	38	0	0	<u>299</u>	<u>169</u>	A	A
	East	30.0	14.0	239	281	0	0	<u>79</u>	<u>66</u>	A	A
	West	30.0	12.0	86	126	32	79	<u>200</u>	<u>129</u>	A	A
Bedford Avenue & North 7th Street	North	30.0	12.0	72	96	38	50	67	47	A	B
	South	30.0	14.5	112	124	0	0	55	49	B	B
	East	<u>22.0</u>	14.5	69	141	101	78	<u>261</u>	<u>124</u>	A	A
	West	30.0	14.5	50	109	0	0	436	193	A	A
Greenpoint											
Manhattan Avenue & India Street	North	50.0	11.5	24	44	22	22	<u>411</u>	<u>220</u>	A	A
	South	50.0	11.5	67	62	22	22	125	135	A	A
	East	30.0	11.4	131	161	94	88	<u>105</u>	<u>84</u>	A	A
	West	30.0	11.4	157	226	0	0	80	52	A	B
Manhattan & Greenpoint Avenues	North	50.0	14.8	47	76	61	84	317	190	A	A
	South	35.0	13.4	42	127	61	103	307	91	A	A
	East	30.0	14.4	96	186	100	150	128	58	A	B
	West	50.0	13.8	141	253	60	96	92	47	A	B
Manhattan & Nassau Avenues	North	<u>36.0</u>	<u>11.5</u>	48	57	66	99	<u>226</u>	<u>184</u>	A	A
	South	<u>36.0</u>	<u>11.0</u>	75	113	53	78	<u>136</u>	<u>85</u>	A	A
	East	<u>30.0</u>	<u>11.0</u>	64	140	57	72	<u>153</u>	<u>63</u>	A	<u>A</u>
	West	<u>30.0</u>	<u>11.0</u>	64	104	0	0	<u>162</u>	<u>95</u>	A	<u>A</u>

Notes:

- (1) The intersection of Bedford Avenue and N. 6th Street is unsignalized. As the HCM methodology for corner and crosswalk analyses is only applicable to signalized intersections, a signal timing plan based on the adjacent intersection at N. 7th Street was assumed in order to analyze corner and crosswalk conditions at this location.



As discussed in Chapter 1, “Project Description,” projected new developments are located on 76 sites within the study area. Land uses that would be present on 37 of these development sites in the No-Action condition would be displaced in the future with the proposed action. The analyses in this section examine future subway, local bus and pedestrian conditions in the year 2013 with the full build out of this projected development scenario.

As shown in Table 16-10 in Chapter 16, “Traffic and Parking,” the net increase in person-trips by subway resulting from the proposed action would total 368 inbound and 2,631 outbound in the AM peak hour, 792 inbound and 792 outbound in the midday, and 2,575 inbound and 1,028 outbound in the PM peak hour. Person-trips by local bus would total 43 inbound and 282 outbound in the AM peak hour, 141 inbound and 141 outbound in the midday, and 328 inbound and 182 outbound in the PM. Trips by walking, bicycle or other non-vehicular/transit modes would total 474 inbound and 1,081 outbound in the AM peak hour, 1,353 inbound and 1,353 outbound in the midday, and 1,846 inbound and 1,757 outbound in the PM.

## Subway Stations

As discussed above, the proposed action would generate a net total of 368 inbound and 2,631 outbound trips by subway in the AM peak hour and 2,575 inbound and 1,028 outbound in the PM peak hour. The estimated numbers of these trips that would occur at subway stations in the vicinity of the proposed action area are shown in Table 17-20. These estimates were based on the proximity of projected development sites to individual stations, the updated travel patterns of journey-to-work trips, and census data.

**TABLE 17-20**  
**Subway Demand From the Proposed Action**  
**by Station**

Station	Peak Hour	Net Trips per Hour	
		Enter	Exit
Bedford Avenue (L)	AM	870	91
	PM	316	862
Greenpoint Avenue (G)	AM	1,634	263
	PM	668	1,593
Nassau Avenue (G)	AM	58	4
	PM	19	57
Lorimer Street (L,G)	AM	69	10
	PM	25	63
<b>Notes:</b> Numbers shown are entering and exiting each subway station.			

As shown in Table 17-20, the greatest numbers of trips would occur at the Greenpoint Avenue station which would experience a total of 1,897 new trips in the AM peak hour and 2,261 new trips in the PM peak hour (entering and exiting combined). This would be followed by the Bedford Avenue station with an estimated 961 and 1,178 new trips in the AM and PM peak hours, respectively, and the Nassau Avenue station with 62 new trips in the AM and 76 in the PM. Approximately 79 new trips in the AM and 88 new

trips in the PM peak hour are also expected to occur at the Lorimer Street station (G, L) at Lorimer Street and Metropolitan Avenue. As the number of trips at the Lorimer Street station would be lower than the 200-trip CEQR analysis threshold, and as this station is located outside of the proposed action area to the east of the Brooklyn-Queens Expressway, it is not analyzed for this study. Although the Nassau Avenue station would also experience fewer than 200 new trips in either peak hour, it is included in the subway station impact analysis given its proximity to the proposed action area and to the proposed park (Site 211).

The *CEQR Technical Manual* identifies a significant adverse impact for stairways in terms of the width increment threshold (WIT) needed to restore conditions to their No-Action state. Stairways that are substantially degraded in level of service or which experience the formation of extensive queues are classified as significantly impacted. Significant stairway impacts are typically considered to have occurred once the following thresholds are reached; for a With-Action LOS D condition, a WIT of six inches or more is considered significant; for a With-Action LOS E condition, three to six inches is considered significant; and for With-Action LOS F, a WIT of one to three inches is considered significant. For stairways operating at LOS A, B or C in the No-Action condition, a refined methodology that was utilized for the *Hudson Yards Rezoning & Development Program GEIS* (June 2004) is employed. This methodology is based on bringing these stairways to an acceptable level of service (v/c ratio of less than 1.00), not to the LOS projected for the No-Action condition.

For turnstiles, escalators and high-wheel exit gates, the *CEQR Technical Manual* defines a significant adverse impact as an increase from a No-Action volume-to-capacity ratio of below 1.00 to a v/c ratio of 1.00 or greater. Where a facility is already at a v/c ratio of 1.00 or greater, a 0.01 change in v/c ratio is also considered significant.

The following sections discuss the effects of trips from projected development sites at the Bedford Avenue (L), Greenpoint Avenue (G) and Nassau Avenue (G) subway stations.

#### ***Bedford Avenue Station (L)***

Project generated trips en route to and from the Bedford Avenue (L) station would be distributed among all four street stairs at this station as well as both fare arrays. The heaviest demand would occur at stair S3 (at the southeast corner of Bedford Avenue and North 7<sup>th</sup> Street) which would experience upwards of 72 percent of the new demand at this station, and at fare array H-9 which would receive approximately 93 percent of new demand. As shown in Table 17-21, all station processors would continue to operate at acceptable LOS C or better in both peak hours in the future with the proposed action with the exception of stair S3. This stair would operate at LOS E in both the AM and PM peak hours, with v/c ratios of 1.33 and 1.38 during these periods, respectively. As the WIT to restore this stair to an acceptable level of service (a v/c ratio of less than 1.00) would total 12.48 inches in the AM and 14.56 inches in the PM, above the three-inch CEQR impact threshold for LOS E, this stair would be significantly impacted by demand from the proposed action in both peak hours based on CEQR criteria.

#### ***Greenpoint Avenue Station (G)***

At the Greenpoint Avenue Station, it is anticipated that new trips generated by the proposed action would be heaviest at stair S1 at the southwest corner of Manhattan and Greenpoint Avenues, followed by stairs S4 and S5 at the southeast and southwest corners of Manhattan Avenue and India Street, respectively. Trips at stairs S2 and S3 at the southeast and northwest corners of Manhattan and Greenpoint Avenues, respectively, are expected to remain essentially unchanged or decline slightly compared to the No-Action condition. Stair S2 would not be used by project trips as it is less convenient for project trips than stairs

**TABLE 17-21**

**2013 Future With the Proposed Action Subway Station Analysis  
Bedford Avenue (L) Station**

**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	No-Action Pk 15 Min Volume	Pk 15 Min Project Increment	With Action Pk 15 Min Volume	2013 No-Action			2013 With Action			Width Increment Threshold in Inches (5)	
								PFM (4)	V/C	LOS	PFM (4)	V/C	LOS		
S4	Stairway @ NE Corner Bedford Avenue/ N. 7th Street	AM	3.20	480	350	60	410	7.30	0.73	C	8.55	0.85	C	12.48 ≥ 3.00 *	14.56 ≥ 3.00 *
		PM	3.20	480	283	77	360	5.89	0.59	B	7.49	0.75	C		
S3	Stairway @ SE Corner Bedford Avenue/ N. 7th Street	AM	3.20	480	416	220	636	8.67	0.87	C	13.25	1.33	E		
		PM	3.20	480	396	266	662	8.25	0.83	C	13.79	1.38	E		
S2	Stairway @ NE Corner Driggs Avenue/ N. 7th Street	AM	3.20	480	59	12	71	1.23	0.12	A	1.48	0.15	A		
		PM	3.20	480	68	18	86	1.42	0.14	A	1.79	0.18	A		
S1	Stairway @ SE Corner Driggs Avenue/ N. 7th Street	AM	3.20	480	225	8	233	4.69	0.47	A	4.85	0.49	A		
		PM	3.20	480	150	8	158	3.13	0.31	A	3.29	0.33	A		

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	No-Action Pk 15 Min Volume	Pk 15 Min Project Increment	With Action Pk 15 Min Volume	2013 No-Action		2013 With Action	
							V/C Ratio	LOS	V/C Ratio	LOS
H-9	Fare Array Bedford Avenue/ N. 7th Street 5 entry/exit turnstiles	AM	2,400	766	280	1,046	0.32	B	0.44	C
		PM	2,400	679	343	1,022	0.28	B	0.43	C
H-1	Fare Array Driggs Avenue/N. 7th Street 1 high-entry/exit turnstile	AM	2,100	284	20	304	0.38	B	0.14	A
		PM	2,100	218	26	244	0.29	B	0.12	A

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.  
(2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.  
(3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).  
(4) Persons per foot width of stairway per minute.  
(5) Width increment threshold needed to restore stairway to future no action conditions.  
(6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYC Transit guidelines.  
\* denotes a significant adverse impact based on CEQR criteria.

S1 and S3 serving the same mezzanine. Stair S3 would experience a net decline in trips due to changes in land uses on nearby projected development sites that would result from the proposed action. Demand is expected to increase at all three fare arrays at this station. As shown in Table 17-22, all analyzed stairways and fare arrays at this station would operate at acceptable LOS B or better in both peak periods in the future with the proposed action. No significant adverse impacts are therefore expected at the Greenpoint Avenue station.

#### ***Nassau Avenue Station (G)***

Based on the location of projected development sites, and the presence of bus stops along Norman Avenue, subway trips using the Nassau Avenue station en route to and from projected development sites would utilize stairs S5 and S6 at Norman Avenue, and stairs S1 and S3 at the southwest and northwest corners at the intersection of Nassau and Manhattan Avenues. As shown in Table 17-23, in the future with the proposed action, all analyzed stairways and fare arrays at this station would operate at acceptable LOS C or better in both peak periods. Therefore, no significant adverse impacts are expected at the Nassau Avenue station with the proposed action.

### **Subway Line Haul**

The proposed action would generate a net increase of 2,999 subway trips in the AM peak hour and 3,603 trips in the PM peak hour. Of these trips, an estimated 1,013 would be added to Manhattan-bound L trains crossing the peak load point at Bedford Avenue in the AM peak hour, and an estimated 995 would be added to Brooklyn-bound L trains crossing the peak load point at Union Square in the PM peak hour. In addition, an estimated 489 trips would be added to Brooklyn-bound G trains crossing the peak load point at Clinton-Washington Avenues in the AM peak hour, and 481 would be added to Queens-bound G trains crossing the peak load point at Fulton Street-Lafayette Avenue in the PM. The remaining peak hour subway trips generated by the proposed action would occur on non-peak direction L or G trains. Table 17-24 shows peak hour, peak direction subway line haul conditions on the Canarsie/14<sup>th</sup> Street (L) Line and the Crosstown (G) Line in the 2013 future with the proposed action. As shown in Table 17-24, in the AM peak hour, L trains would be operating over-capacity in the peak Manhattan-bound direction, with a volume-to-capacity ratio of 1.02 compared to 0.97 in the No-Action condition. In the PM peak hour, L trains would continue to operate below capacity with a v/c ratio of 0.80 in the peak Brooklyn-bound direction compared to 0.75 in the No-Action. Peak direction G trains would continue to operate with available capacity in both peak hours, with v/c ratios of 0.91 Brooklyn-bound in the AM peak hour and 0.54 Queens-bound in the PM.

Under CEQR criteria, any increases in load levels that remain within practical capacity limits are generally not considered significant adverse impacts. Projected increases from a No-Action condition to a With- Action condition that exceeds practical capacity may be considered a significant adverse impact if the proposed action generates five or more additional passengers per car. As AM peak hour demand on Manhattan-bound L trains would exceed practical capacity in the 2013 No-Action condition, and as the proposed action would increase this demand by an average of approximately 7.0 passengers per car, exceeding the five passengers per car CEQR threshold, the Canarsie/14<sup>th</sup> Street (L) Line would be significantly impacted by the proposed action based on CEQR criteria.

**TABLE 17-22**
**2013 Future With the Proposed Action Subway Station Analysis**  
**Greenpoint Avenue (G) Station**
**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	No-Action Pk 15 Min Volume	Pk 15 Min Project Increment	With Action Pk 15 Min Volume	2013 No-Action			2013 With Action			Width Increment Threshold in Inches (5)
								PFM (4)	V/C	LOS	PFM (4)	V/C	LOS	
S4	Stairway @ SE Corner Manhattan Avenue/ India Street	AM	3.53	530	106	139	245	2.00	0.20	A	4.63	0.46	A	
		PM	3.53	530	109	203	312	2.06	0.21	A	5.89	0.59	B	
S5	Stairway @ SW Corner Manhattan Avenue/ India Street	AM	3.53	530	112	179	291	2.12	0.21	A	5.50	0.55	B	
		PM	3.53	530	99	177	276	1.87	0.19	A	5.21	0.52	B	
S2	Stairway @ SE Corner Manhattan Ave. / Greenpoint Ave.	AM	4.40	660	63	0	63	0.95	0.10	A	0.95	0.10	A	
		PM	4.40	660	91	0	91	1.38	0.14	A	1.38	0.14	A	
S3	Stairway @ NW Corner Manhattan Ave. / Greenpoint Ave.	AM	3.53	530	112	-2	110	2.12	0.21	A	2.08	0.21	A	
		PM	3.53	530	129	-2	127	2.44	0.24	A	2.40	0.24	A	
S1	Stairway @ SW Corner Manhattan Ave. / Greenpoint Ave.	AM	4.40	660	88	276	364	1.33	0.13	A	5.52	0.55	B	
		PM	4.40	660	117	328	445	1.77	0.18	A	6.74	0.67	B	

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	No-Action Pk 15 Min Volume	Pk 15 Min Project Increment	With Action Pk 15 Min Volume	2013 No-Action		2013 With Action	
							V/C Ratio	LOS	V/C Ratio	LOS
H-1	Northbound Fare Array Manhattan Avenue/India Street									
		AM	2,400	106	179	285	0.14	A	0.12	A
		PM	2,400	109	177	286	0.15	A	0.12	A
H-2	Southbound Fare Array Manhattan Avenue/India Street									
		AM	2,100	112	139	251	0.07	A	0.12	A
		PM	2,100	99	203	302	0.07	A	0.14	A
N-405	Greenpoint Avenue Fare Array Manhattan Ave./Greenpoint Ave.									
		AM	2,100	263	274	537	0.14	A	0.26	B
		PM	2,100	337	328	665	0.18	A	0.32	B

**Notes:**

- (1) Peak Hours: 8-9 am and 5-6 pm.
- (2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.
- (3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).
- (4) Persons per foot width of stairway per minute.
- (5) Width increment threshold needed to restore stairway to future No-Action conditions.
- (6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYC Transit guidelines.
- \* denotes a significant adverse impact based on CEQR criteria.

**TABLE 17-23**
**2013 Future With the Proposed Action Subway Station Analysis**  
**Nassau Avenue (G) Station**
**STAIRWAYS**

No.	Station Element/Location	Peak Period (1)	Effective Width in Feet (2)	Maximum 15 Minute Capacity (3)	No-Action Pk 15 Min Volume	Pk 15 Min Project Increment	With Action Pk 15 Min Volume	2013 No-Action			2013 With Action			Width Increment Threshold in Inches (5)
								PFM (4)	V/C	LOS	PFM (4)	V/C	LOS	
S4	Stairway @ NE Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	122	0	122	2.30	0.23	A	2.30	0.23	A	
		PM	3.53	530	135	0	135	2.55	0.25	A	2.55	0.25	A	
S2	Stairway @ SE Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	233	0	233	4.40	0.44	A	4.40	0.44	A	
		PM	3.53	530	166	0	166	3.14	0.31	A	3.14	0.31	A	
S3	Stairway @ NW Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	6	13	19	0.11	0.01	A	0.36	0.04	A	
		PM	3.53	530	9	16	25	0.17	0.02	A	0.47	0.05	A	
S1	Stairway @ SW Corner Manhattan Avenue/ Nassau Ave.	AM	3.53	530	35	3	38	0.66	0.07	A	0.72	0.07	A	
		PM	3.53	530	42	4	46	0.79	0.08	A	0.87	0.09	A	
S6	Stairway @ NE Corner Manhattan Avenue/ Norman Ave.	AM	3.53	530	144	3	147	2.72	0.27	A	2.78	0.28	A	
		PM	3.53	530	87	1	88	1.64	0.16	A	1.66	0.17	A	
S5	Stairway @ NW Corner Manhattan Avenue/ Norman Ave.	AM	3.53	530	71	0	71	1.34	0.13	A	1.34	0.13	A	
		PM	3.53	530	81	3	84	1.53	0.15	A	1.59	0.16	A	

**FARE ARRAYS AND EXIT GATES**

No.	Station Element/Location	Peak Period (1)	Maximum 15 Minute Capacity (6)	No-Action Pk 15 Min Volume	Pk 15 Min Project Increment	With Action Pk 15 Min Volume	2013 No-Action		2013 With Action	
							V/C Ratio	LOS	V/C Ratio	LOS
H-2	Northbound Fare Array Manhattan Ave./Norman Ave.									
		1 entry/exit turnstiles	AM 300	144	3	147	0.48	C	0.49	C
		1 high-revolving exit gate	PM 300	87	1	88	0.29	B	0.29	B
H-1	Southbound Fare Array Manhattan Ave./Norman Ave.									
		1 entry/exit turnstiles	AM 750	71	0	71	0.09	A	0.09	A
		entry/exit turnstiles	PM 750	81	3	84	0.11	A	0.11	A
N-408A	North Fare Array Manhattan Avenue/ Nassau Ave.									
		1 entry/exit turnstiles	AM 2,670	396	16	412	0.15	A	0.15	A
		1 high-revolving exit gate	PM 2,670	352	20	372	0.13	A	0.14	A
		4 entry/exit turnstiles								

**Notes:**

(1) Peak Hours: 8-9 am and 5-6 pm.

(2) Effective width measured as stairwell width less one foot to account for handrails. Effective width is further reduced by 20 percent to account for friction where there are two-way flows.

(3) Stair capacity in persons per 15 minutes based on NYC Transit guidelines of 10 PFM (see Note 5).

(4) Persons per foot width of stairway per minute.

(5) Width increment threshold needed to restore stairway to future no action conditions.

(6) Fare array capacity based on 32 ppm for turnstiles, 20 ppm for high entry/exit turnstiles, and 30 ppm for high revolving exit gates as per NYC Transit guidelines.

\* denotes a significant adverse impact based on CEQR criteria.

**TABLE 17-24****2013 Future With The Proposed Action Subway Line Haul Conditions  
Canarsie/14<sup>th</sup> Street (L) Line and Crosstown (G) Line**

Route	Peak Hour	Peak Direction	Trains per Hour (1)	Cars per Hour (1)	Available Capacity (2)	2013 No-Action		2013 Future With the Proposed Action		
						Passengers per Hour (3)	V/C Ratio (4)	Passengers per Hour	V/C Ratio (4)	Avg. Added Passengers per Car
<b>L</b>	AM	Manhattan-Bound	18	144	20,880	20,351	0.97	21,364	1.02	7.0 **
	PM	Brooklyn-Bound	15	120	17,400	12,969	0.75	13,964	0.80	8.3
<b>G</b>	AM	Brooklyn-Bound	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>4,631</u>	<u>0.83</u>	<u>5,120</u>	<u>0.91</u>	<u>15.3</u>
	PM	Queens-Bound	<u>8</u>	<u>32</u>	<u>5,600</u>	<u>2,524</u>	<u>0.45</u>	<u>3,005</u>	<u>0.54</u>	<u>15.0</u>

**Notes:**  
 (1) Assumes AM peak hour L train service levels adjusted to address capacity shortfalls in Future No-Action Condition.  
 (2) Capacity based on 145 passengers/car for 60' cars and 175 passengers/car for 75' cars as per NYC Transit subway car loading guidelines. L trains operate with eight 60'-cars; G trains with four 75'-cars.  
 (3) Projected No-Action volumes based on NYC Transit 2003 peak load point data increased to reflect one percent per year background growth and demand from No-Action sites.  
 (4) Volume-to-capacity ratio.  
 \*\* Denotes a significant adverse impact.

## Bus Service

As shown in Table 16-10, the projected development that is expected to occur with the proposed action would generate an estimated 43 inbound and 282 outbound local bus trips in the AM peak hour, and 328 inbound and 182 outbound local bus trips in the PM peak hour. These trips were assigned to the ten NYC Transit local bus routes serving the proposed action area based on existing demand patterns and the proximity of each route to individual development sites. Table 17-25 shows the conditions on these local bus routes in the future with the proposed action. As shown in Table 17-25, with the exception of the B61 route, all NYC Transit local bus routes serving the proposed action area would continue to operate with available capacity in both peak hours in the future with the proposed action. In the PM peak hour, northbound B61 buses would operate with a deficit of 26 spaces in the future with the proposed action, compared to a surplus of 97 spaces in the No-Action condition. Northbound B61 buses would continue to have available capacity in the AM peak hour, as would southbound B61 buses in both the AM and PM peak hours.

According to current NYC Transit guidelines, increases in bus load levels to above their maximum capacity at any load point is considered a significant adverse impact as it would necessitate the addition of more bus service along that route. Based on this criteria, new demand generated by the proposed action would result in a significant adverse impact to northbound B61 bus service in the PM peak hour.

## Water Taxi Service

As discussed in Chapter 1, "Project Description," the proposed action includes special regulations applicable in the Waterfront Access Plan (WAP) area, which would allow landings for water taxis (with capacity limited to 99 passengers) as a permitted use on the waterfront throughout the WAP area. The installation of such new water taxi landings along the Greenpoint waterfront and at the Schaeffer Brewery site along Kent Avenue in Williamsburg is currently under consideration by the City, although no

**TABLE 17-25**  
**2013 Future With the Proposed Action Local Bus Conditions**

Peak Hour (1)	Route	Peak Direction	Maximum Load Point	Peak Hour Buses	No-Action Available Capacity (2)	Project Increment	With-Action Available Capacity (2)	Notes
AM	B24	EB	Metropolitan Ave./Graham Ave.	3	139	0	139	
		WB	Metropolitan Ave./Graham Ave.	3	103	0	103	
	B39	EB	Delancey St./Allen St.	4	220	2	218	
		WB	Williamsburg Bridge Plaza	4	106	6	100	
	B43	NB	Kingston Ave./Fulton St.	6	161	9	152	
		SB	Graham Ave./Grand St.	7	259	61	198	
	B44	NB	New York Ave./Church Ave.	10	152	4	148	(3)
		SB	Nostrand Ave./Eastern Parkway	9	93	54	39	(3)
	B46	NB	Utica Ave./Eastern Parkway	14	179	4	175	(3)
		SB	Utica Ave./Eastern Parkway	13	374	20	354	(3)
	B48	NB	Flatbush Ave./Lincoln Road	6	138	0	138	
		SB	Nassau Ave./McGuinness Blvd.	6	179	0	179	
	B60	NB	Wilson Ave./Gates Ave.	10	121	4	117	
		SB	Rockaway Blvd./Hegeman Ave.	7	153	20	133	
	B61	NB	Atlantic Ave./Hicks St.	7	166	17	149	
		SB	Manhattan Ave./Nassau Ave.	8	207	55	152	
	Q54	EB	Metropolitan Ave./Fresh Pond Rd.	6	179	0	179	
		WB	Metropolitan Station	8	171	0	171	
	Q59	EB	Grand Ave./Queens Blvd.	5	133	0	133	
		WB	Grand Ave./Flushing Ave.	5	140	2	138	
PM	B24	EB	Metropolitan Ave./Graham Ave.	3	144	0	144	
		WB	Greenpoint Ave./47th St.	3	143	0	143	
	B39	EB	Delancey St./Allen St.	4	44	9	35	
		WB	Williamsburg Bridge Plaza	4	223	5	218	
	B43	NB	Kingston Ave./Fulton St.	6	174	68	106	
		SB	Tompkins Ave./Fulton St.	6	226	36	190	
	B44	NB	New York Ave./Church Ave.	8	184	67	117	(3)
		SB	Nostrand Ave./Eastern Parkway	9	107	33	74	(3)
	B46	NB	Utica Ave./Eastern Parkway	10	250	25	225	(3)
		SB	Utica Ave./Eastern Parkway	13	113	16	97	(3)
	B48	NB	Classon Ave./DeKalb Ave.	4	154	0	154	
		SB	Franklin Ave./Flushing Ave.	5	125	0	125	
	B60	NB	Rockaway Blvd./East NY Ave.	6	211	23	188	
		SB	Rockaway Ave./Hegeman Ave.	6	75	15	60	
	B61	NB	York St./Gold St.	6	97	123	-26	*
		SB	Atlantic Ave./Hicks St.	6	165	69	96	
	Q54	EB	Grand St./Graham St.	6	129	0	129	
		WB	Metropolitan Station	6	211	0	211	
	Q59	EB	Metropolitan Bridge	4	82	3	79	
		WB	Grand Ave./Queens Blvd.	4	113	2	111	
Notes:								
(1) Peak Hours: weekday 8-9 AM and 5-6 PM.								
(2) Available capacity based on a maximum of 65 passengers for a standard 40-seat bus.								
(3) Combined local and limited service.								
* Denotes a significant adverse impact based on CEQR criteria.								



operator has as yet been identified to provide service at either location. The reasonable worst case development scenario (RWCDS) assumes the development of a water taxi stop at the Green Street Pier on the Greenpoint waterfront under both Scenario A and Scenario B. A new water taxi service is not being proposed as part of the action, it is only being evaluated as part of the RWCDS. Such a service would supplement the other transportation resources available in the area, providing residents of the immediate area with water taxi service to other points on the East River (and possibly Hudson River) waterfronts.

There is currently no commitment by a water taxi operator to provide service to Greenpoint, and the operating parameters (routes, frequency and span of operation, etc.) of any such service remain undefined. In order to estimate the potential future ridership for a new water taxi serving the Green Street Pier in Greenpoint, general assumptions were made with respect to likely routes and operating parameters based on the locations of existing landings and the characteristics of established water taxi services in New York Harbor. Census data on population and travel characteristics were evaluated for the area of Greenpoint within ½-mile of the Green Street Pier (the assumed catchment area), as well as for likely destinations in Manhattan where landings currently exist or are planned. These include Pier 11, East 23<sup>rd</sup> Street and East 34<sup>th</sup> Street on the East River, and the North Cove at Battery Park City on the Hudson River. Travelers were assumed to select the water taxi mode based on a combination of relative costs and travel time. In-boat trip times for the water taxi were estimated based on travel times for comparable existing services. Total trip time was assumed to include an additional 15 minutes of travel time for access to and from the ferry landings and waiting time. The commuter fare for a trip by water taxi was assumed to be \$4.00, again comparable to the fare on similar existing services. Out-of-pocket costs for other modes of travel were estimated based on \$0.365 per mile for auto (plus \$10 for parking), and prevailing subway and local and express bus fares (assuming the purchase of discounted monthly fare cards). Taxi fare was assumed at \$3.00 plus \$0.30 for each additional 1/5-mile (this has since increased). The walk and bicycle modes were assumed to incur no cost. Lastly, ridership data from existing East River water taxi services were obtained from NYCDOT and used for validating the overall methodology.

Based on these data, it is estimated that the current demand for a water taxi service at the Green Street Pier in Greenpoint would total upwards of 15 trips in each of the AM and PM peak hours. By the 2013 analysis year, this demand would likely increase to upwards of 20 trips in each peak hour as a result of new development and general background growth. These estimates do not assume the introduction of new or expanded bus routes that would potentially increase the catchment area for a water taxi service beyond the assumed ½-mile from the Green Street Pier.

Residential development resulting from the proposed action would generate new peak hour travel demand that could potentially be served by a water taxi service. (Trips generated by retail development would be predominantly local-based and therefore unlikely to contribute to demand for a water taxi service.) It is estimated that approximately eight percent of new residential trips would be destined to and from locations in Manhattan accessible by existing or planned water taxi landings. Accounting for the availability, cost and travel time of other modes, it is estimated that the proposed action would generate a total demand of 31 new trips by water taxi in the AM peak hour and 37 new trips in the PM peak hour. Adding these new trips to the estimated No-Action demand yields a total peak hour demand for a water taxi service at the Green Street Pier in the range of 50 to 60 trips in the future with the proposed action.

Any new water taxi service at the Green Street Pier in Greenpoint would draw ridership from other modes of travel. As noted above, there is currently no commitment by a water taxi operator to provide service to Greenpoint or Williamsburg, and the operating parameters for any such service remain undefined. The travel demand forecast for projected development shown in Table 16-10 in Chapter 16 therefore

conservatively assumes that all new trips generated by the proposed action would occur on established modes.

## **Pedestrians**

The proposed action would generate new pedestrian demand on analyzed sidewalks, corner areas and crosswalks. This demand would be comprised of trips made solely by walking, as well as pedestrian trips en route to and from subway station entrances and bus stops. As shown in Table 16-10 in Chapter 16, “Traffic and Parking,” projected developments would generate a combined net total of 4,879 walk, subway and bus trips in the AM peak hour, 4,572 in the midday, and 7,716 in the PM peak hour.

Although the proposed action would generate a net increase of approximately 4,572 walk, subway and bus trips in the midday peak hour, these trips would be fewer in number than those generated in either the AM or PM peak hours, and they would be more dispersed and less concentrated on analyzed sidewalks, corner areas and crosswalks than in either of these periods. The analysis of pedestrian impacts therefore focuses on the AM and PM peak hours. As indicated in the analyses, the proposed action would result in no significant adverse impacts during the AM or PM peak hours, therefore, potential midday impacts over and above those identified for the AM and PM would be unlikely.

## ***Sidewalks***

According to *CEQR* criteria, a significant adverse impact to a sidewalk occurs when the flow rate increases by two or more pedestrians per foot per minute (PFM) over No-Action conditions characterized by flow rates over 13 PFM (mid-LOS D). Platoon flow rates are used for assessing impacts. As shown in Table 17-26, in the future with the proposed action, all analyzed sidewalks would operate at an acceptable LOS B or better under platoon conditions in both the AM and PM peak hours, with no sidewalk experiencing a flow rate exceeding 5.4 PFM. Therefore, no analyzed sidewalk would be significantly impacted as a result of new demand generated by the proposed action.

## ***Crosswalks and Corner Areas***

For corner areas and crosswalks, *CEQR* criteria define a significant adverse impact as a decrease in pedestrian space of one or more square feet per pedestrian (SF/ped) when the No-Action condition has an average occupancy of 20 SF/ped (mid-LOS D) or less. Any deterioration from LOS C or better to LOS E or F would also be considered a significant adverse impact. As shown in Table 17-27, in the future with the proposed action, all analyzed corner areas would operate at an acceptable LOS B or better with 49 SF/ped or more in both the AM and PM peak hours. Therefore, no analyzed corner area would be considered significantly impacted by new demand from the proposed action under *CEQR* criteria.

As shown in Table 17-28, in the future with the proposed action, several crosswalks would deteriorate from LOS A or B to LOS C in one or both peak hours. These include the north crosswalk at Bedford Avenue and North 6<sup>th</sup> Street in both the AM and PM peak hours, the north crosswalk at Bedford Avenue and North 7<sup>th</sup> Street in the PM, the south crosswalk at this intersection in both the AM and PM, and the west crosswalk at Manhattan Avenue and India Street in the AM and PM. All other analyzed crosswalks would continue to operate at LOS B or better in both peak periods in the future with the proposed action. As all analyzed crosswalks would continue to operate with 25 SF/ped or more in any peak hour, none of these facilities would be considered significantly impacted by new demand from the proposed action under *CEQR* criteria.

**TABLE 17-26**

**2013 Future With The Proposed Action Sidewalk Conditions**

Blockface	Side of Street	Effective Sidewalk Width (feet)	Peak 15 Min. Volumes		Average Walkway				Platoon Walkway			
					Persons per Foot per Min. (PFM)		Level of Service		Persons per Foot per Min. (PFM)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Williamsburg												
North 6th Street Bedford Avenue to Berry Street	North	11.0	105	145	0.6	0.9	A	A	4.6	4.9	A	A
	South	11.0	80	113	0.5	0.7	A	A	4.2	4.7	A	A
North 7th Street Bedford Avenue to Berry Street	North	11.0	62	81	0.4	0.5	A	A	4.4	4.5	A	A
	South	11.0	236	200	1.4	1.2	A	A	5.4	5.2	B	B
Kent Avenue North 5th Street to North 6th Street	East	6.7	50	102	0.5	1.0	A	A	4.5	5.0	A	B
	West	7.4	33	100	0.3	0.9	B	A	4.3	4.9	A	A
Kent Avenue North 4th Street to North 5th Street	East	6.0	49	103	0.5	1.1	A	A	4.5	5.1	A	B
	West	7.4	44	111	0.4	1.0	A	A	4.4	5.0	A	B
Greenpoint												
West Street Green Street to Freeman Street	East	11.0	57	95	0.4	0.6	A	A	4.4	4.6	A	A
	West	8.3	55	58	0.4	0.5	A	A	4.4	4.5	A	A
West Street Huron Street to Green Street	East	5.3	61	95	0.8	1.2	A	A	4.8	5.2	A	B
	West	10.3	56	58	0.4	0.4	A	A	4.4	4.4	A	A

**TABLE 17-27**  
**2013 Future With The Proposed Action**  
**Corner Area Conditions**

Intersection	Corner	Curb Radii (Feet)	Peak 15 Min. Volumes		Average Ped. Space (SF/Ped)		Level of Service	
			AM	PM	AM	PM	AM	PM
Williamsburg								
Bedford Avenue & North 6th Street (1)	Southwest	12	4	11	<u>230</u>	<u>151</u>	A	A
	Southeast	12	3	4	<u>116</u>	<u>88</u>	A	A
	Northwest	12	36	32	<u>130</u>	<u>103</u>	A	A
	Northeast	12	30	26	<u>90</u>	<u>67</u>	A	A
Bedford Avenue & North 7th Street	Southwest	12	10	13	135	102	A	A
	Southeast	12	445	410	<u>92</u>	<u>91</u>	<u>A</u>	<u>A</u>
	Northwest	12	6	12	263	113	A	A
	Northeast	12	255	278	97	69	A	A
Greenpoint								
Manhattan Avenue & India Street	Southwest	12	18	30	92	68	A	A
	Southeast	12	3	2	105	87	A	A
	Northwest	12	4	11	114	80	A	A
	Northeast	12	7	9	132	106	A	A
Manhattan Avenue & Greenpoint Avenue	Southwest	12	19	71	153	65	A	A
	Southeast	12	11	17	119	49	A	B
	Northwest	12	71	88	155	94	A	A
	Northeast	12	8	12	<u>200</u>	<u>108</u>	A	<u>A</u>
Manhattan Avenue & Nassau Avenue	Southwest	12	12	23	184	105	A	A
	Southeast	12	8	18	<u>185</u>	<u>95</u>	A	A
	Northwest	12	16	16	<u>243</u>	<u>173</u>	A	A
	Northeast	12	45	119	188	<u>93</u>	A	A

**Notes:**

(1) The intersection of Bedford Avenue and N. 6th Street is unsignalized. As the HCM methodology for corner and crosswalk analyses is only applicable to signalized intersections, a signal timing plan based on the adjacent intersection at N. 7th Street was assumed in order to analyze corner and crosswalk conditions at this location.

**TABLE 17-28**  
**2013 Future With The Proposed Action**  
**Crosswalk Conditions**

Intersection	Crosswalk	Curb to Curb Street Width (Ft.)	Crosswalk Width (Ft.)	Peak 15 Min. Volumes		Conflicting Vehicle Volume with Pedestrians (Veh/15min)		With Vehicles			
				AM	PM	AM	PM	Average Ped. Space (SF/Ped)		Level of Service	
								AM	PM	AM	PM
Williamsburg											
Bedford Avenue & North 6th Street (1)	North	30.0	14.0	138	179	145	95	<u>30</u>	<u>25</u>	<u>C</u>	<u>C</u>
	South	30.0	14.0	54	93	0	0	<u>117</u>	<u>65</u>	A	<u>A</u>
	East	30.0	14.0	295	361	0	0	<u>62</u>	<u>49</u>	A	<u>B</u>
	West	30.0	12.0	124	172	29	81	<u>135</u>	<u>91</u>	A	A
Bedford Avenue & North 7th Street	North	30.0	12.0	97	136	38	50	48	32	B	C
	South	30.0	14.5	216	167	0	0	25	34	C	C
	East	<u>22.0</u>	14.5	75	159	101	78	<u>240</u>	<u>109</u>	A	A
	West	30.0	14.5	50	208	0	0	436	96	A	A
Greenpoint											
Manhattan Avenue & India Street	North	50.0	<u>13.0</u>	<u>27</u>	<u>51</u>	22	22	<u>364</u>	<u>189</u>	A	A
	South	50.0	11.5	100	99	22	22	81	82	A	A
	East	30.0	<u>13.0</u>	<u>241</u>	<u>289</u>	94	88	<u>53</u>	<u>43</u>	<u>B</u>	<u>B</u>
	West	30.0	11.4	291	<u>402</u>	0	0	38	26	C	C
Manhattan & Greenpoint Avenues	North	50.0	14.8	47	76	61	84	317	190	A	A
	South	35.0	<u>13.5</u>	65	170	61	102	194	66	A	A
	East	30.0	<u>14.5</u>	96	186	99	146	128	58	A	B
	West	50.0	13.8	141	253	60	96	92	47	A	B
Manhattan & Nassau Avenues	North	<u>36.0</u>	<u>11.5</u>	48	57	66	99	<u>226</u>	<u>184</u>	A	A
	South	<u>36.0</u>	<u>11.0</u>	81	132	53	78	<u>125</u>	<u>71</u>	A	A
	East	<u>30.0</u>	<u>11.0</u>	64	140	57	72	<u>153</u>	<u>63</u>	A	<u>A</u>
	West	<u>30.0</u>	<u>11.0</u>	64	104	0	0	<u>162</u>	<u>95</u>	A	<u>A</u>

Notes:

(1) The intersection of Bedford Avenue and N. 6th Street is unsignalized. As the HCM methodology for corner and crosswalk analyses is only applicable to signalized intersections, a signal timing plan based on the adjacent intersection at N. 7th Street was assumed in order to analyze corner and crosswalk conditions at this location.

### ***Pedestrian Access to Proposed Park***

Under Scenario A, the worst case transportation condition, a 27.8 acre waterfront park would be mapped to the west of Kent Avenue and Franklin Street from Bushwick Inlet on the north to North 9<sup>th</sup> Street on the south. The primary access to this park would be from the Kent Avenue/Franklin Street corridor. Existing sidewalks along this corridor in the vicinity of the park site are typically 9 to 10 feet in width, widening to 15 feet in width north of North 14<sup>th</sup> Street. Intersections adjacent to the park are generally stop controlled on the minor street approaches, and there are presently no crosswalks at any of these locations. The nearest signalized intersection is at Quay Street immediately to the north of the park site. As discussed previously in this chapter, existing pedestrian demand along this waterfront corridor is very light, with fewer than 20 persons per hour observed on sidewalks to the north and to the south of the site of the proposed park. A review of NYPD accident data for the three-year period from May 1998 through April 2001 reported in the *Kent Avenue/Franklin Street Reconstruction Design Report* prepared by NYCDDC on behalf of NYCDOT found that there were a total of eight pedestrian and five bicycle accidents along the entire Kent Avenue/Franklin Street corridor in Williamsburg and Greenpoint. This represents two percent and 1.2 percent, respectively, of the total number of accidents occurring along the corridor during the three year period.

The development of the proposed park would increase pedestrian activity on sidewalks and crosswalks along the Kent Avenue/Franklin Street corridor. As shown in Table 16-7 in Chapter 16, “Traffic and Parking,” weekday travel demand generated by the park would total approximately 414 trips in the AM peak hour (in and out combined), 1,004 in the midday and 827 in the PM peak hour. On Sundays, demand would increase to 738, 1,794 and 1,478 trips in the AM, midday and PM peak hours, respectively. Approximately 86 percent of these trips would be made on foot or by other non auto or transit modes (e.g., bicycle). The existing 9 to 15-foot-wide sidewalks along the Kent Avenue/Franklin Street corridor in the vicinity of the proposed park would likely operate at acceptable levels of service with this level of new demand. It should also be noted that by 2013, approximately 95 percent of the sidewalk pavement along Kent Avenue and Franklin Street would have been reconstructed by NYCDDC, with ADA-compliant pedestrian ramps at all corners, as part of NYCDDC’s planned reconstruction of the Kent Avenue/Franklin Street corridor.

The NYCDDC/USDOT *Kent Avenue/Franklin Street Reconstruction Design Report* identified several intersections along the corridor that could become potential access points to the waterfront, including Franklin Street at Quay Street and at North 14<sup>th</sup> Street, both of which are in proximity to the site of the proposed park. The report indicated that pedestrian safety could be increased at these crossing locations through the installation of:

- High visibility crosswalk markings
- “Yield to Pedestrians” signs at unsignalized locations
- Curb extensions into the parking lane (where operationally feasible) to shorten crossing distances for pedestrians.

The NYCDDC/USDOT *Kent Avenue/Franklin Street Reconstruction Design Report* also evaluated a number of intersections for signalization, including three intersections in proximity to the proposed park, Franklin Street at Meserole Avenue and Kent Avenue at North 12<sup>th</sup> and North 11<sup>th</sup> Streets. While signalization would increase pedestrian safety, the study found that a new signal at these locations was not warranted based on existing traffic and pedestrian volumes. However, a new signal may become warranted once the park and other new developments are constructed, and vehicular traffic and pedestrian volumes increase.

## **E. CONCLUSIONS**

This chapter analyzes the effects of added travel demand from projected development sites on subway stations, local bus services and pedestrian facilities within Greenpoint and Williamsburg during the AM and PM peak hours. The results of the analyses show that demand from projected development sites would significantly impact one street stair at the Bedford Avenue subway station. Stair S3 at the southeast corner of Bedford Avenue and North 7<sup>th</sup> Street would be impacted in both the AM and PM peak hours. Manhattan-bound subway demand generated by the proposed action would also result in a significant adverse line haul impact to Manhattan-bound L trains in the AM peak hour. In addition, new local bus trips generated by projected development sites would result in a significant PM peak hour impact to NYC Transit's B61 bus route in the northbound direction. New pedestrian demand would not, however, result in any significant adverse impacts to analyzed sidewalks, corner areas or crosswalks in either peak hour. Chapter 22, "Mitigation," provides a description of measures to be developed to mitigate the transit impacts identified in this chapter.